purpose would result in the screens' exposure to sunlight, and that a buyer of such goods would rely on such Defendants' skill or judgment to select or furnish suitable goods; accordingly, such Defendants did, pursuant to MCL 440.2315, impliedly warrant that the screens and windows would be fit for that purpose.

19. Defendants breached such warranty in selecting and furnishing screens that were not fit for such purpose, because the foreseeable exposure to sunlight caused the screens to deteriorate and emit toxins.

20. That, by reason of the breaches of warranty by these Defendants, Plaintiff Lisa Kelley was caused all such illness, injury, loss and damage as aforementioned.

WHEREFORE, Plaintiff Lisa Kelley prays that this Honorable Court award her damages against the Defendants herein, jointly and severally, in whatever amount she is found to be entitled, together with interest, costs, and attorney fees.

COUNT II - NEGLIGENCE OF PHIFER WIRE PRODUCTS, INC.

21. Plaintiff Lisa Kelley adopts and incorporates by reference each and every allegation of the preceding paragraphs of Plaintiff's Complaint as if specifically repeated and set forth herein.

22. Defendant Phifer Wire Products, Inc. owed a duty of care to foreseeable purchasers or users of the screens, such as Plaintiff Lisa Kelley, to utilize that degree of care and prudence that a reasonable person would use in manufacturing, producing,

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selling or labeling its screens so as not to expose such persons to an unreasonable risk of harm or injury.

23. Notwithstanding said duty, Defendant Phifer Wire Products, Inc. did negligently breach same by utilizing a plastisol stabilizer with insufficient pigment, inadequate to prevent the screens' deterioration and release of toxins when exposed to sunlight, coating its screens with dangerous and toxic chemicals, failing to recall such screens when such Defendant knew or should have known of their dangerous and defective nature, failing to adequately warn or notify Plaintiff Lisa Kelley or other merchants of the dangers and defects of such screens, and such other acts of negligence or omissions as may be discovered.

24. That, as a direct and proximate result of this Defendant's negligent acts and omissions, Plaintiff Lisa Kelley was caused to suffer all such injury, illness, loss and damage as aforementioned.

WHEREFORE, Plaintiff Lisa Kelley prays that this Honorable Court award her damages against Defendant Phifer Wire Products, Inc. in whatever amount to which she is found to be entitled, together with interest, costs, and attorney fees.

COUNT III - LOSS OF CONSORTIUM

25. Plaintiff Robert Kelley adopts and incorporates by reference each and every allegation of the preceding paragraphs of Plaintiff's Complaint as if specifically repeated and set forth herein.

26. That at all times mentioned, Plaintiff Robert Kelley was and is the lawful husband of Plaintiff Lisa Kelley.

27. That as a direct and proximate result of the illness and injuries inflicted upon his wife by the breaches of warranty and negligence of the Defendants, this Plaintiff has been deprived of the aid, comfort and society of his wife in his hour of need, and has had to care for her illnesses and injuries, and has suffered and will suffer an interference with those rights known as "consortium."

WHEREFORE, Plaintiff Robert Kelley prays that this Honorable Court award him damages against the Defendants, jointly and severally, in whatever amount to which he is found to be entitled, together with interest, costs, and attorney fees.

BARRY S. SIGMAN (P27885)
Attorney for Plaintiff
30800 Telegraph Road, #2985
Bingham Farms, Michigan 48025
(810) 540-3166

DATED: December 5, 1994

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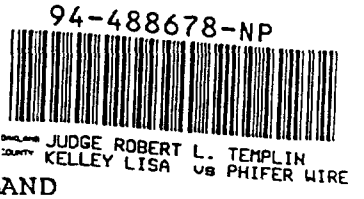

STATE OF MICHIGAN

IN THE CIRCUIT COURT FOR THE COUNTY OF OAKLAND

LISA KELLEY and
ROBERT KELLEY,

Plaintiffs,

94- NP

vs.

PHIFER WIRE PRODUCTS, INC., an Alabama corporation, and WEATHERVANE WINDOW, INC., a Michigan corporation, Jointly and Severally,

Defendants.

BARRY S. SIGMAN (P27885)
Attorney for Plaintiff
30800 Telegraph Road, #2985
Bingham Farms, Michigan 48025
(810) 540-3166

'94 DEC 16 A9:57

OAKLAND COUNTY CLERK

DEP.

CLERK

JURY DEMAND

NOW COMES the plaintiffs, LISA KELLEY AND ROBERT KELLEY, by and through their attorney, BARRY S. SIGMAN, and hereby make demand for trial by jury in the above-entitled cause of action.

BARRY S. SIGMAN (P27885)
Attorney for Plaintiff
30800 Telegraph Rd., #2985
Bingham Farms, MI 48025
(810) 540-3166

DATED: December 2, 1994

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STATE OF MICHIGAN

OAKLAND COUNTY CIRCUIT COURT

95-490223-NP

JUDGE DEBORAH G. TYNER
MANDEVILLE,J vs PHIFER WIRE

JOSEPH P. MANDEVILLE and TAMMIE SUE MANDEVILLE, Individually; and TAMMIE SUE MANDEVILLE as next friend of MINDY M. CRABTREE, AMY E. MANDEVILLE, ASHLEY L. MANDEVILLE, and DANIEL J. MANDEVILLE, minors,

Plaintiffs,

-vs-

PHIFER WIRE PRODUCTS, INC., An Alabama Corporation, and WEATHERVANE WINDOW, INC., A Michigan Corporation,

Defendants. /

No. NP

JURY TRIAL DEMANDED

PAUL A. BAILEY (P 27176)
Attorney for Plaintiffs
236 S. Broadway
Lake Orion, MI 48362
(810) 693-4080 /

LAW OFFICES OF PAUL A. BAILEY, 236 SOUTH BROADWAY (M-24), LAKE ORION, MICHIGAN 48362

There is no other pending or resolved civil action arising out of the transaction or occurrence alleged in this complaint.

COMPLAINT

The plaintiffs through their Attorney Paul A. Bailey state for their complaint as follows:

GENERAL ALLEGATIONS

1. Plaintiffs Joseph P. Mandeville and Tammie Sue Mandeville, his wife, are residents of Orion Township, Oakland County, Michigan.

2. Tammie Sue Mandeville is the mother, and next friend of Mindy M. Crabtree, Amy E. Mandeville, Ashley L. Mandeville and Daniel J. Mandeville, minors.

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3. Defendant Phifer Wire Products, Inc. ("PHIFER"), upon information and belief, is an Alabama corporation with principal offices in Tuscaloosa, Alabama.

4. Defendant Weathervane Window, Inc. ("WEATHERVANE") is a Michigan corporation with principal offices in Brighton, Michigan.

5. The amount in controversy exceeds the jurisdictional requirement of $10,000.00, exclusive of costs, interest, and attorney fees.

6. All defendants do business in this county, or sell property or services within Oakland County.

7. Joseph P. Mandeville and Tammie Sue Mandeville contracted with JAL Properties, Inc., a general contractor, to build a home in Orion Township, Oakland County, and when the home was completed in February of 1990, the parties took possession and moved into the home.

8. The home constructed for plaintiffs by JAL Properties included, as original equipment, screens on all windows which were sold by defendant Weathervane, and which were manufactured by defendant Phifer.

9. Soon after moving into their new home plaintiffs began to suffer from various illnesses, including severe upper respiratory problems.

10. The screens were removed from the home sometime during the summer of 1993.

11. The screens manufactured by Phifer were defective, and allowed chemicals and toxins to be released into the home environment which were inhaled by plaintiffs.

12. At the time plaintiffs moved into their new home, Phifer knew, or should have known that the screens were defective and subjected owners to an unreasonable risk of serious harm.

13. As a direct and proximate result of having been exposed to chemicals, toxins, and other pollutants, plaintiffs suffered, and continue to suffer medical problems, including severe upper respiratory infections, and asthma.

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LAW OFFICES OF PAUL A BAILEY, 236 SOUTH BROADWAY (M-24), LAKE ORION, MICHIGAN 48362

LAW OFFICES OF PAUL A. BAILEY, 236 SOUTH BROADWAY (M-24), LAKE ORION, MICHIGAN 48362

COUNT I

14. The screens installed in plaintiffs' home were designed, produced, sold and/or manufactured by Phifer.

15. The screens were defective at the time they were sold by Phifer because they were not reasonably fit for their intended and ordinary use.

16. Phifer is a company claiming to have knowledge and skill in connection with the production of screens.

17. Under MCL 440.2304, Phifer impliedly warranted that the screens were merchantable.

18. For goods to be merchantable they must be fit for the ordinary purpose for which such goods are used.

19. Phifer breached the implied warranty of merchantability because the screens were not fit for their intended purpose, failed to run within the variations permitted by the agreement of even kind and quality among the units sold, or were not adequately contained, packaged, or labeled and did not warn of the health hazards when exposed to direct sunlight.

20. Phifer knew or should have known that use of the screens would result in the screens being exposed to direct sunlight when the windows were open.

21. As a direct and proximate result of Phifer's breach of implied warranties, the plaintiffs have been damaged as follows: plaintiffs have suffered pain and suffering, severe emotional distress, continuing illness, and have incurred medical expenses, and will continue to suffer damages in the future.

COUNT II

22. Plaintiffs adopt by reference paragraphs 14 - 21.

23. Phifer owed a duty to plaintiffs to use a degree of care and prudence that a reasonable manufacturer would use in producing, selling, and labeling the product.

24. Phifer breached its duty by negligently using a plastisol stabilizer with insufficient pigment in it, such that it would deteriorate when exposed to direct sunlight, causing the

release of toxins into the environment; failing to warn of the potential hazards of the product when exposed to direct sunlight; using toxins in the screens; using chemicals with dangerous or unknown effects on human beings in the screens it manufactured and sold; failing to recall the screens after being put on actual or constructive notice of their potential to cause injury or damage; failing to notify the plaintiffs of dangers associated with the screens after discovered by defendant.

25. As a direct and proximate result of the negligence and gross negligence of Phifer, plaintiffs have suffered injuries as set forth above.

COUNT III

26. Plaintiffs adopt by reference paragraphs 14 - 25.

27. Defendant Weathervane was the retailer which delivered the screens to JAL Properties, who then installed them at the home of plaintiffs.

28. The subject screens were defective at the time they left the control of Weathervane.

29. Weathervane is a company dealing with goods of this kind and otherwise holds itself out as having knowledge and skill in household products and specifically windows and screens.

30. Under MCL 440.2304, Weathervane impliedly warranted that the screens were merchantable.

31. For the goods to be merchantable they must be at least such as to be fit for the ordinary purpose for which such goods are used and must be adequately contained, packaged, and labeled.

32. Weathervane breached its impled warranties of merchantability because the screens were not fit for their ordinary purpose, were not adequately contained, packaged, or labeled, and did not warn of the dangerous condition of the screens.

33. Under MCL 440.2315, where the seller has reason to know of any particular purpose for which goods are required, and buyers rely on the seller's skill or judgment to select or

LAW OFFICES OF PAUL A. BAILEY, 236 SOUTH BROADWAY (M-24), LAKE ORION, MICHIGAN 48362

furnish suitable goods, there is, unless modified under the Uniform Commercial Code, and implied warranty that the goods will be fit for such purpose.

34. Weathervane knew or should have known that the screens were to be used for a residential home.

35. Weathervane breached the implied warranty of fitness for a particular purpose by failing to provide screens that were reasonably fit and safe for their intended purpose.

36. As a direct and proximate result of the Weathervane's breach of implied warranties plaintiffs suffered damages and injuries as set forth above.

WHEREFORE, plaintiffs request judgment against the defendants, jointly and severally, for whatever sum plaintiffs are found to be entitled to, together with costs, interest, and attorney fees.

DEMAND FOR TRIAL BY JURY IS HEREBY MADE.

December 21, 1994

Paul A. Bailey

PAUL A. BAILEY
Attorney for Plaintiffs

LAW OFFICES OF PAUL A. BAILEY, 236 SOUTH BROADWAY (M-24), LAKE ORION, MICHIGAN 48362

MS

STATE OF MICHIGAN

IN THE CIRCUIT COURT FOR THE COUNTY OF OAKLAND

MARY S. GOLARZ, individually and as Next Friend of KEITH GOLARZ, a minor, JOSEPH GOLARZ, SUSAN GOLARZ, and KURT GOLARZ

Plaintiffs,

v.

Case No. 95-489438-NP

JUDGE DAVID F. BRECK
GOLARZ,MARY vs WEATHERVANE

WEATHERVANE WINDOWS, INC., a Michigan Corporation; PHIFER WIRE PRODUCTS, INC., an Alabama Corporation; and HENDERSON GLASS INC., a Michigan corporation,

Defendants

_____/

'95 JAN -3 A11:10

DAVID J. SHEA (P41399)
SOMMERS, SCHWARTZ, SILVER & SCHWARTZ, P.C.
Attorneys for Plaintiff
2000 Town Center, Suite 900
Southfield, MI 48075-1100
(810) 355-0300

_____/

LAW OFFICES
SOMMERS, SCHWARTZ, SILVER & SCHWARTZ, P.C.
2000 TOWN CENTER • SUITE 900 • SOUTHFIELD, MICHIGAN 48075 • (810) 355-0300

There is no other civil action between these parties arising out of the same transaction or occurrence as alleged in this complaint pending in this court, nor has any such action been previously filed and dismissed or transferred after having been assigned to a judge, nor do I know of any other civil action, not between these parties, arising out of the same transaction or occurrence as alleged in this complaint that is either pending or was previously filed and dismissed, transferred, or otherwise disposed of after having been assigned to a judge in this court.

COMPLAINT AND JURY DEMAND

NOW COME Plaintiffs, Mary Golarz, individually and as Next Friend of Keith Golarz, a minor, Joseph Golarz, Kurt Golarz, and Susan Golarz, by and through their attorneys

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SOMMERS, SCHWARTZ, SILVER & SCHWARTZ, P.C., and for their Complaint, state as follows:

1. That at all pertinent times hereto, Plaintiffs were residents of the County of Oakland, State of Michigan.

2. That at all pertinent times hereto, Defendants existed and/or did business in the County of Oakland, State of Michigan.

3. That all of the cause of action arose in the County of Oakland, State of Michigan.

4. That the amount in controversy exceeds Ten Thousand ($10,000) dollars, exclusive of interests and costs.

5. That on or about May 5, 1989, Plaintiffs received and were exposed to toxic residential screens manufactured, designed, distributed and/or installed by Defendants.

6. That said screens were removed and replaced by Defendants in June of 1993.

7. That plaintiffs received three subsequent replacement sets of residential screens from defendants throughout 1993.

8. That as a result of Plaintiffs' use and exposure to Defendants' toxic residential screens, they have suffered injury and damage.

9. That Defendants owed Plaintiffs certain duties, including but not limited to the following:

(a) to dispense a product which conformed to the express warranties attached to said product;

(b) to dispense a product which conformed to the implied warranties of merchantablilty attached to said product;

(c) to dispense a product which conformed to the implied warranties of fitness

LAW OFFICES
SOMMERS, SCHWARTZ, SILVER & SCHWARTZ, P.C.
2000 TOWN CENTER • SUITE 900 • SOUTHFIELD, MICHIGAN 48075 • (810) 355-0300

for a particular purpose attached to said product;

(d) to dispense a product which conformed to the implied warranties attached to said product;

(e) to design, formulate, manufacture, develop standards, prepare, process, inspect, test, market, advertise, package, label, distribute, and/or install said residential screens to be reasonably safe during reasonable foreseeable usage;

(f) to warn and instruct of the risk of serious injuries and damage from foreseeable usage;

(g) to recall said product in order to correct the defects and failures to warn; and

(h) to act so as not to be in violation of the Michigan Consumers Protection Act, MCL 445.901 et seq.

10. That Defendants breached said duties owed to Plaintiffs.

11. That as a proximate cause of the breaches of duty by Defendants, Plaintiffs were caused to suffer serious injury and damage.

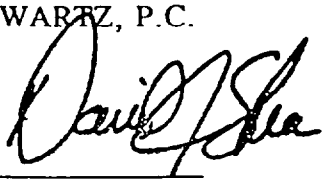
WHEREFORE, Plaintiffs pray that this Honorable Court enter judgment in their favor in whatever amount they are found to be entitled to, said amount to be in excess of Ten

LAW OFFICES
SOMMERS, SCHWARTZ, SILVER & SCHWARTZ, P.C.
2000 TOWN CENTER • SUITE 900 • SOUTHFIELD, MICHIGAN 48075 • (810) 355-0300

Thousand ($10,000) Dollars, exclusive of interest, costs and attorney fees.

Respectfully submitted,

SOMMERS, SCHWARTZ, SILVER
& SCHWARTZ, P.C.

By: 

DAVID J. SHEA (P41399)
Attorney for Plaintiffs
2000 Town Center, Suite 900
Southfield, MI 48075-1100
(313) 355-0300

Dated: December 31, 1994

LAW OFFICES
SOMMERS, SCHWARTZ, SILVER & SCHWARTZ, P.C.
2000 TOWN CENTER • SUITE 900 • SOUTHFIELD, MICHIGAN 48075 • (810) 355-0300

STATE OF MICHIGAN

IN THE CIRCUIT COURT FOR THE COUNTY OF MACOMB

SERVED
P-34427

MARIE DeMAN,

Plaintiff,

vs.

Case No. 95 0049 -NP

PHIFER WIRE PRODUCTS, INC., an Alabama corporation, PELLA WINDOW AND DOOR COMPANY, INC., a Michigan corporation, and NU-VIEW INSTALLATIONS, INC., a Michigan corporation, jointly and severally,

Defendants.

BARRY S. SIGMAN (P27885)
Attorney for Plaintiff
30800 Telegraph Road, #2985
Bingham Farms, Michigan 48025
(810) 540-3166

THERE IS NO OTHER PENDING OR RESOLVED CIVIL ACTION ARISING OUT OF THE TRANSACTION OR OCCURRENCE ALLEGED IN THE COMPLAINT

COMPLAINT

NOW COMES the Plaintiff, MARIE DeMAN, by and through her attorney, BARRY S. SIGMAN, and for her cause of action against the Defendants, herein says unto this Honorable Court as follows:

1. That Plaintiff MARIE DeMAN resides in Sterling Heights, Macomb County, Michigan, and that the causes of action hereinafter alleged arose in Macomb County, Michigan.

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2. Upon information and belief, Defendant PHIFER WIRE PRODUCTS, INC. is a corporation chartered under the laws of Alabama, and selling products of its manufacture in Macomb County, Michigan.

3. Defendant PELLA WINDOW AND DOOR COMPANY, INC. is a Michigan corporation which transacts business in Macomb County, Michigan.

4. Defendant NU-VIEW INSTALLATIONS, INC. is a Michigan corporation which transacts business in Macomb County, Michigan.

5. The amount in controversy in this litigation exceeds $10,000, exclusive of costs, interest, or attorney fees.

6. On or about May 4, 1990, February 15, 1991, and June 6, 1991, the Plaintiff did purchase from and have Defendant NU-VIEW INSTALLATIONS, INC. install in her home certain windows, such windows having been assembled and/or manufactured by Defendant PELLA WINDOW AND DOOR COMPANY, INC. and containing screens manufactured and designed by Defendant PHIFER WIRE PRODUCTS, INC.

7. That the aforementioned screens were defective and dangerous in that the plastisol stabilizer utilized by Defendant PHIFER WIRE PRODUCTS, INC. contained insufficient pigment to prevent the rapid deterioration of the material when exposed to direct sunlight, and that the chemical coating on the screens was released into the environment of Plaintiff's house, causing her to continually inhale toxins from the screens.

8. That, as a direct and proximate result of her exposure to the toxins from the screens, the Plaintiff became ill and was

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caused to suffer and continue to suffer with pulmonary and respiratory illness, including but not limited to a constant dry cough.

9. That by reason of the premises, Plaintiff has suffered and will suffer pain and suffering, shock, mortification, mental anguish, sleeplessness, disability, interference with and inability to engage in her normal social and recreational pursuits, and diminishment in the quality and enjoyment of her life.

10. That by reason of the premises, she has incurred and will incur numerous medical expenses in and about the cure and alleviation of her sufferings.

11. That Plaintiff discovered that the defective screens were the cause of her illness in 1993, and had the defective screens removed from her home and replaced, ultimately with screens of galvanized steel.

COUNT I - BREACH OF WARRANTY, PHIFER WIRE PRODUCTS, INC.

12. Plaintiff adopts and incorporates by reference each an every allegation of the preceding paragraphs of Plaintiff's Complaint as if specifically repeated and set forth herein.

13. That the aforementioned screens were designed, manufactured, and/or sold by Defendant PHIFER WIRE PRODUCTS, INC.

14. That Defendant PHIFER WIRE PRODUCTS, INC. is a merchant with respect to goods of that kind, and such Defendant did, pursuant to MCL 440.2314, impliedly warrant that such screens were merchantable.

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15. That the aforementioned screens were defective at the time they left the control of Defendant PHIFER WIRE PRODUCTS, INC. and that such Defendant did breach such warranty of merchantability because the screens were not fit for the ordinary purposes for which such goods are used and were not adequately contained, packaged, or labeled as they did not warn that such screens deteriorated and emitted toxins when exposed to sunlight.

16. Defendant PHIFER WIRE PRODUCTS, INC. knew or had reason to know of the particular purpose for which such goods were required and that the particular purpose of such screens would result in the screens' exposure to sunlight, and that a buyer of such goods would rely on such Defendant's skill or judgment to select or furnish suitable goods; accordingly, such Defendant did, pursuant to MCL 440.2315, impliedly warrant that the screens would be fit for that purpose.

17. Defendant PHIFER WIRE PRODUCTS, INC. did breach such warranty, because such screens were not fit for such purpose, and the foreseeable exposure to sunlight caused the screens to deteriorate and emit toxins.

18. That, by reason of this Defendant's breach of warranty, the Plaintiff was caused all such injury, illness, loss, and damage as aforementioned.

WHEREFORE, Plaintiff prays that this Honorable Court award here damages against Defendant PHIFER WIRE PRODUCTS, INC. in whatever amount she is found to be entitled, together with interest, costs, and attorney fees.

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COUNT II - NEGLIGENCE, DEFENDANT PHIFER WIRE PRODUCTS, INC.

19. Plaintiff adopts and incorporates by reference each and every allegation of the preceding paragraphs of Plaintiff's Complaint as if specifically repeated and set forth herein.

20. Defendant PHIFER WIRE PRODUCTS, INC. owed a duty to foreseeable purchasers of its screens such as the Plaintiff, to utilize that degree of care and prudence that a reasonable person would use in manufacturing, producing, selling or labeling its product so as not to expose such persons to an unreasonable risk of harm or injury.

21. Notwithstanding said duty, this Defendant did negligently breach same by utilizing a plastisol stabilizer with insufficient pigment, inadequate to prevent the screens' deterioration and release of toxins when exposed to sunlight, coating its screens with dangerous and toxic chemicals, failing to recall such screens when such Defendant knew or should have know of their defective and dangerous nature, failing to adequately warn or notify the Plaintiff or other merchants of the dangers and defects of such screens, and such other acts of negligence or omission as may be discovered.

22. That, as a direct and proximate result of this Defendant's negligent acts and omissions, the Plaintiff was caused to suffer all such injury, loss and damage as aforementioned.

WHEREFORE, the Plaintiff prays that this Honorable Court award her damages against Defendant PHIFER WIRE PRODUCTS, INC. in

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whatever amount she is found to be entitled, together with interest, costs, and attorney fees.

COUNT III - BREACH OF WARRANTY, DEFENDANTS PELLA WINDOW AND DOOR COMPANY, INC., AND NU-VIEW INSTALLATIONS, INC.

23. Plaintiff adopts and incorporates by reference each and every allegation of the preceding paragraphs of Plaintiff's Complaint as is specifically repeated and set forth herein.

24. Defendant PELLA WINDOW AND DOOR COMPANY, INC. and Defendant NU-VIEW INSTALLATIONS, INC. are merchants with respect to goods of such kind, and did provide, sell to and install for Plaintiff windows containing the defective screens as aforementioned.

25. Such Defendants knew or had reason to know of the particular purpose for which such goods were required and that such purpose would result in the screens' exposure to sunlight, and that a buyer of such goods would rely on the skill or judgment of such Defendants to select or furnish suitable goods.

26. Such Defendants did impliedly warrant, pursuant to MCL 440.2314 and MCL 440.2315, that such screens were merchantable and fit for the particular purpose for which such Defendants had reason to know they were required.

27. Such Defendants did breach such warranties because such screens were defective, unmerchantable, unfit for the ordinary purposes for which such goods are used, were not adequately contained, packaged, or labeled, did not warn that such screens deteriorated and emitted toxins when exposed to sunlight and not

fit for the particular purpose for which these Defendants had reason to know the Plaintiff required such goods.

28. That, by reason of the breach of warranty of these Defendants, Plaintiff was caused to suffer all such injury, loss, and damage as aforementioned.

WHEREFORE, Plaintiff prays that this Honorable Court award her damages against Defendant PELLA WINDOW AND DOOR COMPANY, INC. and Defendant NU-VIEW INSTALLATIONS, INC. in whatever amount to which she is found to be entitled, together with interest, costs, and attorney fees.

BARRY S. SIGMAN (P27885)
Attorney for Plaintiff
30800 Telegraph Road, #2985
Bingham Farms, MI 48025
(810) 540-3166

DATED: December 6, 1994

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STATE OF MICHIGAN

IN THE CIRCUIT COURT FOR THE COUNTY OF MACOMB

MARIE DeMAN,

Plaintiff,

vs. Case No. 96 -NP

PHIFER WIRE PRODUCTS, INC., an Alabama corporation, PELLA WINDOW AND DOOR COMPANY, INC., a Michigan corporation, and NU-VIEW INSTALLATIONS, INC., a Michigan corporation, jointly and severally,

Defendants.

BARRY S. SIGMAN (P27885)
Attorney for Plaintiff
30800 Telegraph Road, #2985
Bingham Farms, Michigan 48025
(810) 540-3166

JURY DEMAND

NOW COMES the plaintiff, MARIE DeMAN, by and through her attorney, BARRY S. SIGMAN, and hereby makes demand for trial by jury in the above-entitled cause of action.

BARRY S. SIGMAN (P27885)
Attorney for Plaintiff
30800 Telegraph Road, #2985
Bingham Farms, Michigan 48025
(810) 540-3166

DATED: December 6, 1994

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STATE OF MICHIGAN

IN THE 39th CIRCUIT COURT FOR THE COUNTY OF LENAWEE

REBECCA SUSAN JONES,
Personal Representative of the
Estates of LAWANDA M. RITTENHOUSE
Deceased; and, HAZEL B. JORN,
Deceased,

Plaintiffs,

vs.

PHIFER WIRE PRODUCTS, INC.,
an Alabama corporation; and,
WINTER SEAL CORPORATION,
an Ohio corporation,
Jointly and Severally,

Defendants.

Case No. 6931 -NP

JUDGE HONORABLE [illegible]

FILED
39TH CIRCUIT CC

MAR 22 1996

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LEE CITY CLERK

DAVID J. READER (P27877)
WILLIAM G. PIERSON (P32119)
READER & PIERSON
116 N. State Street
Howell MI 48843
#517/546-8840

There is no other civil action between these parties arising out of the same transaction or occurrence as alleged in this Complaint pending in this Court, nor has any such action been assigned to a Judge.

1

COMPLAINT

COMPLAINT

Plaintiff, REBECCA SUSAN JONES, Personal Representative of the Estates of LAWANDA M. RITTENHOUSE, Deceased, and HAZEL B. JORN, Deceased, by her attorneys, READER & PIERSON , complains against Defendants, PHIFER WIRE PRODUCTS, INC. and WINTER SEAL CORPORATION, as follows:

1. Plaintiff, REBECCA SUSAN JONES, is a resident of Lenawee County, Michigan, and has been appointed Personal Representative of the Estates of her mother, LAWANDA M. RITTENHOUSE, Deceased, and her grandmother, HAZEL B. JORN, Deceased, by the Lenawee County Probate Court.

2. Defendant, PHIFER WIRE PRODUCTS, INC., is a foreign corporation with its principal place of business in Tuscaloosa, Alabama, but does business in Michigan by virtue of distribution of their products in Michigan and use of their products by consumers in Michigan, and who is engaged in the business of manufacturing and distributing vinyl-coated fiberglass window screens.

3. Defendant, WINTER SEAL CORPORATION, is a foreign corporation with its principal place of business in Ohio, but does business in Michigan by virtue of distributing the products of PHIFER WIRE PRODUCTS, INC. in Michigan and use of those products by consumers in Michigan.

4. The amount in controversy exceeds $10,000.00 and the case is otherwise within the jurisdiction of this Court.

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5. In approximately 1988, Plaintiff Decedent, LAWANDA M. RITTENHOUSE, purchased new windows for her home that included vinyl-coated fiberglass screens manufactured by Defendant PHIFER WIRE PRODUCTS, INC. and sold to Mrs. Rittenhouse through Defendant WINTER SEAL CORPORATION.

6. From the time that the screens were installed until their removal in April of 1994, Plaintiff Decedents, LAWANDA M. RITTENHOUSE and HAZEL B. JORN, were exposed to emissions of volatile organic compounds given off by Defendant's screens.

7. The by-products given off by the screens are known to be associated with inflammatory lung disease and immunologic alteration.

8. The exposure to the by-products given off by the screens to Plaintiff Decedent LAWANDA M. RITTENHOUSE was a cause for the on-set or aggravation of pulmonary fibrosis, resulting in a sudden decline of her pulmonary condition and death on December 24, 1994.

9. The exposure to the by-products given off by the screens to Plaintiff Decedent HAZEL B. JORN was a cause of the on-set or aggravation of pulmonary fibrosis and acute respiratory failure, resulting in her death on September 30, 1994.

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COUNT I - BREACH OF IMPLIED WARRANTY

10. Plaintiff incorporates by reference each of the preceding paragraphs as though fully restated here.

11. Defendants PHIFER WIRE PRODUCTS, INC. and WINTER SEAL CORPORATION owed the Plaintiff Decedents a duty to manufacture and sell screens that were reasonably fit for the purpose that was intended, anticipated or reasonably foreseeable on the part of the Defendants.

12. Defendants PHIFER WIRE PRODUCTS, INC. and WINTER SEAL CORPORATION breached their duties owed to the Plaintiff Decedents in that the screens were defective when they left the control of the Defendants and by manufacturing and selling screens which were not reasonably fit for the use intended, anticipated or reasonably foreseeable by the Defendants, in that the screens gave off volatile organic compound by-products, which were a proximate cause or contribution to the deaths of the Plaintiff Decedents, even though they used the screens in the intended manner.

13. As a result of the breach of the duty of implied warranty owed to the Plaintiff Decedents, LAWANDA M. RITTENHOUSE eventually suffered death, but before death suffered severe and permanent injuries including, but not limited to:

(a) Development of a chronic cough over the last three [3] to four [4] years of her life;

(b) Fibrotic changes in her lungs;

(c) The onset or aggravation of pulmonary fibrosis causing a rapid decline in her health over the last years of her life;

(d) The loss of social and normal pleasures and comforts of life due to her declining pulmonary condition;

(e) Medical expenses for treatment of her progressive pulmonary condition;

(f) Conscious pain and suffering prior to death;

(g) Loss of the society and companionship of her mother, HAZEL B. JORN, who predeceased her by approximately three [3] months;

(h) As a result of Decedent's death, Plaintiff has suffered the loss of her mother's counsel, guidance, society and companionship; and,

(i) Other damages which the Plaintiff reserves the right to amend to this Complaint, in addition to the above, as they may become known through discovery.

14. As a result of the breach of the duty of implied warranty owed to the Plaintiff Decedents, HAZEL B. JORN eventually suffered death, but prior to her death suffered serious injuries/diseases including, but not limited to:

(a) Progressive dyspnea;

(b) Emphysema;

(c) Acute respiratory failure;

(d) Pulmonary fibrosis;

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(e) Acceleration of her lung disease;

(f) Various medical expenses incurred for treatment of these injuries/diseases;

(g) Loss of social and normal pleasures and comforts of life;

(h) As a result of Decedent's death, Plaintiff has suffered the loss of Decedent's counsel, guidance, society and companionship; and,

(i) Other damages which the Plaintiff reserves the right to amend to this Complaint, in addition to the above, as they may become known through discovery.

WHEREFORE, Plaintiff, REBECCA SUSAN JONES, prays this Honorable Court grant Judgment against all Defendants in whatever amount in excess of $10,000.00 this Honorable Court determines that the Plaintiff is entitled, together with interest, costs and attorney fees.

COUNT II - FAILURE TO WARN

15. Plaintiff incorporates the preceding paragraphs by reference as though fully restated here.

16. Defendants, PHIFER WIRE PRODUCTS, INC. and WINTER SEAL CORPORATION, jointly and severally, owed a duty to warn regarding the risk of injury/disease associated with the use of vinyl-coated fiberglass window screens and the volatile organic compound by-products given off by those screens.

17. These Defendants had knowledge of the by-products given off by the screens but breached their duty by failing to warn Plaintiff or Plaintiff Decedents of the reasonably foreseeable injuries or disease that exposure to these by-products might cause or aggravate.

18. These Defendants' failure to warn the Plaintiff or Plaintiff Decedents was a proximate cause of the injuries/disease and ultimate death of the Plaintiff Decedents.

19. As a direct result of these Defendants' breach of their duty to warn the Plaintiff Decedents suffered the serious and permanent injuries and diseases more fully set forth in Paragraphs 13 and 14, above.

WHEREFORE, Plaintiff, REBECCA SUSAN JONES, prays this Honorable Court grant Judgment against all Defendants in whatever amount in excess of $10,000.00 this Honorable Court determines that the Plaintiff is entitled, together with interest, costs and attorney fees.

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COUNT III - NEGLIGENCE / DEFECTIVE DESIGN, MANUFACTURE, TESTING AND SALE

20. Plaintiff incorporates by reference each of the preceding paragraphs as though fully restated here.

21. Defendants, PHIFER WIRE PRODUCTS, INC. and WINTER SEAL CORPORATION, owed a duty to Plaintiff Decedents to exercise reasonable care in eliminating an unreasonable risk of injury/disease in the design, manufacture, testing and sale of the vinyl-coated fiberglass window screens.

22. These Defendants were negligent in the design, manufacture, testing and sale of the window screens in that they violated their duty to exercise reasonable care to eliminate unreasonable risks of injury, disease or aggravation of pre-existing injuries or diseases.

23. These Defendants were further negligent in failing to provide window screens which met industry standards, guidelines established by authoritative voluntary associations or by legislative or other governmental regulations.

24. These Defendants were further negligent in designing, manufacturing, testing and selling window screens which carried a latent risk of injury or disease and Defendants

failed to adequately communicate the nature of that risk to users of their products, including this Plaintiff and her Decedents.

25. These Defendants were further negligent and breached their duties owed to the Plaintiff Decedents as they knew of the screens giving off by-products and of the foreseeable risks to Plaintiff Decedents and yet failed to take any steps to eliminate the risks or to warn Plaintiff Decedents of the risks involved.

26. These Defendants knew, or should have known, that alternative designs, manufacturing processes, testing or materials would have been effective as a reasonable means of eliminating or minimizing the foreseeable risk of danger and injury or disease to the Plaintiff Decedents.

27. The breach of the above duties were a proximate cause of the Plaintiff Decedents' injuries and ultimate deaths and damages as described in Paragraphs 13 and 14, above.

WHEREFORE, Plaintiff, REBECCA SUSAN JONES, prays this Honorable Court enter judgment in whatever amount in excess of $10,000.00 this Honorable Court determines the Plaintiff is entitled, together with interest, costs and attorney fees.

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COUNT IV - VIOLATION OF MICHIGAN CONSUMER PROTECTION ACT

28. Plaintiff incorporates by reference each of the preceding paragraphs as though fully restated here.

29. Defendants owed Plaintiff a duty to abide by the laws and statutes of the State of Michigan in the design, manufacture, testing and sale of their products in the State.

30. Defendants breached this duty by violating the *Michigan Consumer Protection Act, MCLA 445.903,* by engaging in unfair, unconscionable, or deceptive methods, acts or practices in the conduct of trade or commerce as defined in Sub-paragraphs:

(c) representing that goods or services have . . . characteristics, ingredients, uses, benefits or quantities which they do not have . . . ;

(e) representing that goods or services are of a particular standard, quality, or grade, or that goods are of a particular style or model, if they are of another; and,

(s) failing to reveal a material fact, the omission of which tends to mislead or deceive the consumer, and which fact could not reasonably be known by the consumer.

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31. Defendants breach of this duty was a proximate cause of the Plaintiff Decedents' injuries and damages as specified in Paragraphs 13 and 14, above.

32. As additional damages for breach of the *Michigan Consumer Protection Act*, Plaintiff prays for reasonable attorney fees, as allowed by the statute.

WHEREFORE, Plaintiff, REBECCA SUSAN JONES, prays this Honorable Court enter judgment in whatever amount in excess of $10,000.00 this Honorable Court determines the Plaintiff is entitled, together with interest, costs and attorney fees.

READER & PIERSON

Dated: March 7, 1996

BY: William G Pierson

WILLIAM G. PIERSON (P32119)
Attorneys for Plaintiffs
116 N. State Street
Howell MI 48843
#517/546-8840

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Copy

U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, D.C. 20207

October 24, 1996

VIA FAX (205) 750-3022

Charles Morgan
Executive Vice President and Corporate Counsel
Phifer Wire Products, Inc.
P.O. Box 1700
Tuscaloosa, AL 35403-1700

RE: CPSC CA930075
Phifer Wire Products, Inc.
Polymer (PVC) Coated Fiberglass Screening Material

Dear Mr. Morgan:

Pursuant to our telephone conversation of October 22, 1996, and recently received consumer inquiries to the Commission's staff concerning the above mentioned product, I would like to request the following information:

(1) An updated list of consumer complaints since your correspondence of July 2, 1996. Please include copies of the complaints, indicating the date of receipt.

(2) Has your firm received any consumer complaints concerning the revised formulated (improved) screens that replaced the subject defective screens? If so, please provide a list and copies of these complaints indicating the date of receipt.

(3) Copies of the seven lawsuits mentioned in your letter of July 2, 1996. Please indicate the monetary amounts of the three lawsuits suits that were settled.

(4) What heat stabilizers, pigments, plasticizers, lubricants, and other modifiers/additives were blended with the PVC formulation applied to the subject screens before January 1, 1988?

(5) What heat stabilizers, pigments, plasticizers, lubricants, and other modifiers/additives were blended with the PVC between January 1, 1988 and July 1989? Describe the changes in ingredients or processes believed to have caused the defect.

(6) What heat stabilizers, pigments, plasticizers, lubricants, and other modifiers/additives were blended with the PVC after

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July 1, 1989? Describe which of these (or other) ingredients (or process) were altered to make the PVC more resistant to degradation by heat and UV. What is specifically meant by the explanation that "the PVC formula was improved by increasing the level of pigmentation"?

(7) A sample of recently manufactured "improved" screen and a sample of the defective screen. If possible, the size of each sample should be nine square feet packaged in a tightly sealed bag (polyvinylfluoride is best but polyethylene is acceptable). The recently manufactured sample should not be exposed to direct sunlight prior to submitting to us.

Please submit the requested information and samples prior to Thursday, October 31, 1996. The samples should be sent to my attention at the following address:

U.S. Consumer Product Safety Commission
4330 East West Highway, Room 613
Bethesda, MD 20814-4408

Your cooperation in this matter is greatly appreciated. If you should have any questions concerning this request, please contact me as noted below.

Sincerely,

Judith Hayes
Compliance Officer
(301) 504-0608, ext. 1355
Fax (301) 504-0359

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JUL 0 8 RECD

PHIFER WIRE PRODUCTS, INC.
P. O. BOX 1700 • TUSCALOOSA, ALABAMA 35403-1700 U.S.A.

■ CHARLES E. MORGAN
Executive Vice President and Corporate Counsel

July 2, 1996

Mr. Marc J. Schoem
Director
Division of Corrective Actions
U.S. Consumer Product Safety Commission
5401 Westbard Avenue - Room 240
Washington, DC 20207

Re: CPSC CA930075
Phifer Wire Products, Inc.
Polymer (PVC) Coated Fiberglass Screening Material

Dear Mr. Schoem:

On June 4, 1993, you sent us a request for information about the above referenced product. On June 23, 1993, I responded with a letter, Full Report, and copies of all existing test reports on the subject product and other supporting documentation. You investigated the product and sent me a letter dated October 26, 1993 which concluded that no further action was required by the Commission under Section 15 of the CPSA.

About six months after submitting our response, Full Report, etc., I submitted some additional information for this file under my cover letter dated January 6, 1994. During the three years since our initial report, we have received a few more complaints and had more testing done on the product. The following consumers have reported allergic type reactions to the product:

NAME	DATE
Nada Feldman	July 1993
K.I. Dunford	July 1993
Marie DeMan	September 1993
D.J. Pygman	January 1994
Margaret Steen	January 1994
Lois Moore	April 1994
Tammie Mandeville	May 1994
Mary Olsson	May 1994
Joe Bergantino	July 1994
Anne Hosbach	March 1995

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NAME	DATE
Steven Antonello	April 1995
Bruce Jones	May 1995
Helen Garofalo	July 1995
Cora Abel	July 1995

Four of the consumers whose names we provided in our initial response (Chase, Golarz, Kamuda and Kelley) subsequently filed law suits. Three of the above listed claims (DeMan, Mandeville, and Jones) resulted in suits, making a total of seven product liability lawsuits against Phifer Wire Products in the company's 44-year history. Three of those suits were settled and dismissed; the other four are pending.

When I was contacted by Mary Olsson in May of 1994, I promptly supplied Mrs. Olsson with copies of all existing test data on our product. Mrs. Olsson was not completely satisfied with the test data I sent her and requested that additional testing be done on the actual window screening removed from her home. Based upon advice from an environmental consultant at Northeastern University, who had been selected and employed by Mrs. Olsson, she recommended that we use Air Quality Sciences, Inc. of Atlanta, Georgia ("AQS") to do more in-depth testing on the product. We agreed to pay for the testing at AQS using material sent directly from Mrs. Olsson to the test facility in Atlanta.

Although we played no part in selecting AQS, we did some investigation and learned that AQS is a highly respected facility that does work for the Environmental Protection Agency. The testing done on our product by AQS in 1994 was the most thorough and sophisticated testing that has been done on this product to date. I have enclosed a complete copy of the AQS Test Report dated February 16, 1995. Since that report is highly technical, I asked them to issue an Interpretative Report to put the data into perspective. I have enclosed a copy of that Interpretative Report, which is dated March 7, 1995. I also asked Dr. Clifton D. Crutchfield, a scientist who had been involved with a great deal of the research information we supplied to you with our initial report, to review the Air Quality Sciences data and explain to us the significance of their findings. I have enclosed a copy of a letter dated November 23, 1994 in which Dr. Crutchfield comments on the AQS report. (Please note that the reason Dr. Crutchfield's letter is dated prior to the date of the AQS report is because the AQS report was initially issued in November 1994 but was reissued in February 1995 to correct clerical errors. Dr. Crutchfield reviewed the data in the initial AQS report which is exactly the same data contained in the clerically corrected report dated February 16, 1995.)

The Air Quality Sciences Interpretative Report puts the test data into perspective by comparing the total volatile organic compounds (TVOC) emissions from our product with "normal ranges" established for other indoor building materials. Though the report notes that no

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normal ranges have been established for window screen emissions, it compares the results of our product testing to the criteria established for flooring and wall coverings. AQS notes that the emissions from our products were at levels significantly below the TVOC emissions criteria established for flooring and wall coverings. The report also states that a regulatory evaluation of the chemicals detected in emissions from our product did not indicate the presence of any known or potential carcinogens.

Dr. Crutchfield found the results of the AQS study to be "consistent with the results of four previous tests done of Phifer screening material that I reviewed and summarized in a report dated April 27, 1993. Those previous studies, conducted independently by four separate laboratories and/or environmental firms, also found emission rates from Phifer screening materials to be far below any level considered to be potentially toxic." We submitted a complete copy of all of those four previous tests along with Dr. Crutchfield's April 27, 1993 summary report in our initial response to your request for information.

As noted in our initial response, we believe that the problem that lead to the failure of some of our window screening material was corrected in 1989. No new reports have been received during the past year. If we ever receive any more complaints about the material, we will notify you.

Sincerely yours,

PHIFER WIRE PRODUCTS, INC.

Charles Morgan

Charles Morgan

CM:jh

Enclosures

AIR QUALITY SCIENCES, INC.

INDOOR AIR QUALITY EVALUATION OF

VINYL COATED FIBERGLASS WINDOW SCREENING

prepared for

PHIFER WIRE PRODUCTS, INC.

Released by Air Quality Sciences, Inc.
AQS Report No. 01891-01R2
February 16, 1995

SUPERSEDES AQS REPORT 01891-01 and AQS REPORT 01891-01R

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Released by Air Quality Sciences, Inc.
Date Prepared: February 16, 1995
AQS Project #: 01891
AQS Report #: 01891-01R2
SUPERSEDES AQS REPORT 01891-01 and AQS REPORT 01891-01R

CONTENTS

Released by Air Quality Sciences, Inc.
Date Prepared: February 16, 1995
AQS Project #: 01891
AQS Report #: 01891-01R2
SUPERSEDES AQS REPORT 01891-01 and AQS REPORT 01891-01R

EXECUTIVE SUMMARY

PROJECT DESCRIPTION

Air Quality Sciences, Inc. (AQS) is pleased to present the results of its environmental chamber evaluation of "Vinyl Coated Fiberglass Window Screening" sample for Phifer Wire Products, Inc. AQS conducted this product study following the protocols and guidelines of ASTM Standard D5116. (1). Testing of the window screen sample was completed under standard environmental chamber operations conditions as presented in Table 1. Product exposure was conducted at 49ºC (120ºF).

The window screen sample was monitored for emissions of total volatile organic compounds (TVOC) and other individual volatile organic compounds (IVOCs) in a small environmental chamber over a 96 hour period. Predicted air concentrations were determined with the assumption there would be 0.2 m^2 of window screen exposed in an interior room 23 m^3 in volume (10 ft^2 area with an 8 ft high ceiling). The outside air exchange rate within this room was assumed to be 0.35 air changes per hour (ACH).

RESULTS

Emission factors and predicted air concentrations for total volatile organic compounds are provided in Table 2. Emission factors for identified individual chemicals are provided in Table 3.

The TVOC levels decreased for the first 24 hours of exposure, after which they became constant. Numerous volatile organic compounds were found to be emitting from the window screen material, as shown in Table 3. There were numerous alcohols and ketones detected. One of the primary alcohols detected, 3,7-dimethyloctanol had predicted air levels ranging from 25 $\mu g/m^3$ to 3 $\mu g/m^3$ during a 96 hour exposure period. Another chemical, phthalic anhydride, appeared to be increasing with exposure time with predicted air levels ranging from 2 $\mu g/m^3$ to 9 $\mu g/m^3$.

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PRODUCT EVALUATION METHODOLOGIES

ENVIRONMENTAL CHAMBER

The window screen sample was loaded in a small environmental chamber and potential chemical emissions were analytically evaluated. Computerized control and quality assurance measures ensured that the chambers were operated in a precise and accurate manner according to the specifications required for volatile organic compound emission studies for consumer materials and following the guidelines of ASTM D5116 (1). Environmental chamber study parameters are presented in Table 1.

ANALYTICAL MEASUREMENTS

Total volatile organic compound and individual organic compound measurements were made utilizing solid sorbent collection followed by thermal desorption and gas chromatographic/mass spectrometric identification and quantification as presented by AQS Method 006, which follows EPA Method IP-1B. The multi-bed collection technique, separation, and detection analysis methodologies have been adapted from techniques presented by the USEPA and other researchers (2-5).

AIR CONCENTRATION DETERMINATIONS

Emission rates of total volatile organic compounds, 3,7-dimethyloctanol, and phthalic anhydride were used in an appropriately prepared computer model to determine potential air concentrations of the pollutants. The computer model utilized the measured emission rate changes over the one week time period to determine the change in air concentrations that would accordingly occur. The EPA's Indoor Air Exposure Model, Version 2.0, was specifically modified to accommodate Phifer Wire Product's sample and chemicals of interest (6). Ventilation and occupancy parameters assumed a 23 m^3 space with 0.35 air changes per hour of outside air.

The model measurements were made with the following assumptions: air within the residential room is well-mixed at the breathing level zone of the occupied space; environmental conditions are maintained at 50% relative humidity and 23°C (73°F); there are no additional sources of these pollutants; and there are no sinks or potential re-emitting sources within the space for these pollutants.

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QUALITY CONTROL PROCEDURES FOR ENVIRONMENTAL CHAMBER EVALUATIONS

Air Quality Sciences' quality control/assurance plan is designed to ensure the integrity of the measured and reported data obtained during its product evaluation studies. This program encompasses all facets of the measurement program from sample receipt to final review and issuance of reports.

One of the most critical parameters in AQS' product evaluations is the measurement of ultratrace levels of gaseous chemicals, typically in the ppb air concentration range. This necessitates a very rigidly maintained effort to control background contributions and contamination. These contributions must be significantly less than those levels being measured for statistically significant data to be obtained. AQS addresses this control in many directions including chamber construction materials, air purification and humidification, sampling materials and chemicals, sample introduction, and analysis.

All environmental chamber procedures are in accordance with ASTM Guide D5116-90.

Various measures are routinely implemented in a product's evaluation program. These include but are not limited to:

appropriate record keeping of sample identifications and tracking throughout the study;

calibration of all instrumentation and equipment used in the collection and analysis of samples;

tracking of all chamber parameters including air purification, environmental controls, air change rate, chamber mixing, air velocities, and sample recovery;

analysis of spiked samples for accuracy determinations;

duplicate analyses of 10% of all samples evaluated and analyzed;

linear regression of all standardization;

analysis of controls including chamber backgrounds, sampling media, and instrument systems.

QC data on TVOC measurements conducted for the year 1993 showed an average precision measurement of 9.5% RMD based on duplicate measurements and 94% accuracy based on toluene spikes. Performance audits conducted on-site by EPA related to industry test programs were favorable.

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TABLE 1

ENVIRONMENTAL CHAMBER TEST PARAMETERS FOR PHIFER WIRE PRODUCTS, INC.

PRODUCT 01891-001AA

Product Description:	Vinyl coated fiberglass window screening
AQS Sample Identification:	AQS01891-001AA
Environmental Chamber:	SC4
Product Loading:	0.81 m^2/m^3
Test Conditions:	1.0 ACH 14.0% RH ± 2.0% RH 49.0°C ± 1.0°C
Test Period:	10/07/94 - 10/11/94
Test Description:	The product was received at AQS as packaged and shipped by Mary Olsson on October 5, 1994. The package was visually inspected and stored in a controlled environment following sample check in. Just prior to loading, the window screen was unpackaged and placed into the chamber on stainless steel x-supports to expose both sides of the sample. It was then tested according to the specified protocol.

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TABLE 2

SUMMARY OF TOTAL VOLATILE ORGANIC COMPOUND EMISSION FACTORS AND PREDICTED AIR CONCENTRATIONS

PRODUCT 01891-001AA, VINYL COATED FIBERGLASS WINDOW SCREEN

ELAPSED EXPOSURE HOUR	EMISSION FACTOR $\mu g/m^2$-hr	PREDICTED AIR CONCENTRATION $\mu g/m^3$
4.000	339.7	164
8.000	228.8	150
24.000	40.5	31
48.000	28.7	31
72.000	12.3	31
96.000	35.5	31

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TABLE 3

EMISSION FACTORS OF IDENTIFIED INDIVIDUAL VOLATILE ORGANIC COMPOUNDS AT 4, 24, AND 96 ELAPSED EXPOSURE HOURS
$\mu g/m^2 \cdot hr$

PRODUCT 01891-001AA, VINYL COATED FIBERGLASS WINDOW SCREEN

COMPOUND IDENTIFIED	ELAPSED EXPOSURE HOUR		
	4.0	24.0	96.0
1-Decanol (N-Decyl alcohol)*	2.6		
1-Decene	5.7		
1-Dodecene	14.2	1.1	
1-Heptanol, 6-methyl*	6.9	0.9	
1-Hexanol, 2-ethyl	3.1		
1-Hexanol, 5-methyl-*	11.8	1.6	1.5
1-Nonanol*	14.6		
1-Octene, 3,3-dimethyl-*	5.2		
1-Penten-3-one*	2.4	1.2	1.5
1-Pentene, 2,3-dimethyl- (8CI9CI)*	42.9	5.7	4.5
1-Pentene, 2-methyl*	4.1		
1-Pentene, 3-methyl*	1.0		
1-Undecene*	9.3		
2(3H)-Furanone, dihydro-4,4-dimethyl-*	4.6		
2-Butanone (Methyl ethyl ketone, MEK)*	2.6		
2-Butenal, 2-methyl-, (E)-*	2.9		

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COMPOUND IDENTIFIED	ELAPSED EXPOSURE HOUR		
	4.0	24.0	96.0
2-Decenal, (Z)- (8CI9CI)*	13.5		
2-Ethylacrolein*	3.2		
2-Pentanone*	1.6		
2-Propanone, 1-(1-methylethoxy)-*	1.2		
3-Buten-2-one*	11.7	6.0	4.3
3-Octanol, 3,7-dimethyl*	43.2	6.2	5.3
4-Penten-2-one, 4-methyl- (8CI9CI)*	0.9		
Acetic acid	14.9		
Acetone (2-Propanone)	6.0	1.6	0.9
Butyrolactone*	8.2		
Cyclopentane, 1,1-dimethyl*	26.4	3.2	2.9
Cyclopentane, propyl- (8CI9CI)*	19.5		
Cyclopentasiloxane, decamethyl*	1.9		
Cyclopropane, 1-ethyl-2-methyl-, cis-*	2.5		
Cyclopropane, ethyl- (8CI9CI)*	2.5		
Cyclotetrasiloxane, octamethyl	2.1		
Ethanol	5.3	5.0	5.2
Ethanone, 1-cyclopropyl-*		0.7	
Furan, 2-methyl-	2.6		
Heptane, 2,4-dimethyl	1.6		
Hexane, 2,2,4-trimethyl	4.3		
Methanol		5.1	
Pentane, 2,2,4-trimethyl (Isooctane)	13.2		
Pentane, 2,2-dimethyl*	2.4		

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COMPOUND IDENTIFIED	ELAPSED EXPOSURE HOUR		
	4.0	24.0	96.0
Pentane, 2,3,3-trimethyl- (8CI9CI)*	6.6		
Pentane, 2,3,4-trimethyl	2.7		
Phenol	6.3		
Phthalic anhydride*		2.1	9.4
Unidentified	1.7		

*Indicates NIST/EPA/PHS best library match only.
Individual volatile organic compounds are calibrated relative to toluene.

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REFERENCES

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2. Winberry, W. T., et al., "Compendium of Methods for the Determination of Air Pollutants in Indoor Air", Office of Research and Development, USEPA, RTP, NC, April 1990.

3. Bertoni, G., F. Bruner, A. Liberti, and C. Perrino, J. Chromatogr., 203, 263-270 (1981).

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AIR QUALITY SCIENCES, INC.

INTERPRETIVE REPORT ON AQS REPORT 01891-01R2
PREPARED FOR: PHIFER WIRE PRODUCTS

Air Quality Sciences, Inc. (AQS) presented the results of an environmental chamber evaluation of a "vinyl coated fiberglass window screen" material for Phifer Wire Products. These results were reported in AQS report 01891-01R2, dated February 16, 1995. Volatile organic compound emissions were measured and reported as total volatile organic compounds (TVOC) and individual chemicals.

The product was placed into an environmental chamber with an atmosphere designed to simulate an actual indoor environment at 50% relative humidity and 23°C (75°F) with a dynamic air flow. Following a four hour equilibration period in the chamber, chemical emissions were measured over a four day period. The product was studied over an extended time period to determine whether or not the chemical emissions would decay over time. Measured emission data were used in an exposure model to determine chemical concentrations which would result in a normal room with this product in use.

The data showed emission factors for TVOC ranging from 339.7 $\mu g/m^2 \cdot hr$ after four hours of exposure to an average of 29.2 $\mu g/m^2 \cdot hr$ within 24 hours of exposure. These data indicate the levels of total volatile chemicals being emitted per square area (m^2) of the screen material per hour. The material appeared to be a constant emitter at 24 hours of exposure which means that it will constantly emit at this level for some extended time.

There are no available emissions data on comparable screen materials to determine whether or not these emissions data appear to be within normal ranges. There are some suggested TVOC emissions criteria for generic indoor materials such as flooring, wall coverings, etc. as available from the Environmental Protection Agency. In addition, the carpet industry has a voluntary testing program which has a TVOC criterion for IAQ acceptability. The emission results of the screen material are compared to TVOC criteria in Table 1. As shown, the TVOC emission level of the screen is significantly less than the default TVOC criteria used for the other products.

There were over forty individual chemicals identified as emitting from the screen materials The majority of these chemicals flashed off of the product within 24 hours of exposure, and were no longer emitted. A regulatory evaluation of these chemicals, as shown in Table 2, did not indicate the presence of any known human or potential human carcinogens. Those chemicals found to be emitting following 24 hours of exposure included some alcohols and ketones which could have an odor. There was an indication of the presence of phthalic anhydride, often associated with alkyd resins and plasticizers. This chemical is a skin irritant at levels much higher than that found emitting from the screen. However, the analytical technique used in this analysis is not specific for this compound, and the results may not be quantitatively accurate. It is recommended that a more thorough study be completed of emissions of this chemical and potential exposure levels.

Released by Air Quality Sciences, Inc.
Date Prepared: March 7, 1995
AQS Project #: 01891
AQS Report #: 01891-02

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1331 Capital Circle

HEALTH EFFECTS GROUP, INC.

305 East Fort Lowell Road Tucson, Arizona 85705
(602) 888-4442 (602) 888-9334 Fax

Toxicology
Environmental Health
Industrial Hygiene

November 23, 1994

Charles Morgan
Phifer Wire Products, Inc.
P.O. Box 1700
Tuscaloosa, Alabama 35403

Dear Mr. Morgan:

I have reviewed the report entitled "Indoor Air Quality Evaluation of Vinyl Coated Fiberglass Window Screening" that was prepared by Air Quality Sciences, Inc. (AQS Report No. 01891-01). The emissions from Phifer screening material detected by Air Quality Sciences during their dynamic environmental exposure studies were present at extremely low levels.

Based on air concentrations modeled by Air Quality Sciences from their measured emission data and the EPA Indoor Air Exposure Model, Version 2.0, volatile organic compound (VOC) exposure rates from the screening material would be far below any level considered to be potentially toxic.

The findings of the Air Quality Sciences study are consistent with the results of four previous tests of Phifer screening material that I reviewed and summarized in a report dated April 27, 1993. Those previous studies, conducted independently by four separate laboratories and/or environmental firms, also found emission rates from Phifer screening materials to be far below any level considered to be potentially toxic.

Sincerely,

Clifton D. Crutchfield

Clifton D. Crutchfield, Ph.D.
Certified Industrial Hygienist

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TABLE 1

TVOC EMISSION FACTOR AT 24 ELAPSED EXPOSURE HOURS COMPARED TO AVAILABLE IAQ CRITERIA
$\mu g/m^2 \cdot hr$

PRODUCT 01891-001AA, VINYL COATED FIBERGLASS WINDOW SCREEN

Target Analytes	AQS Measured Values ($\mu g/m^2 \cdot hr$)	IAQ Guidelines or Other Criteria ($\mu g/m^2 \cdot hr$)
TVOC	40.5	500 - carpet[1] 600 - flooring material and floor coating[2] 400 - wall materials, wall coatings, and movable partitions[2]

[1]Criteria level currently being used by the carpet industry's voluntary labeling of products.
[2]Default criteria for flooring materials by Tucker of USEPA, Indoor Air '90, 1990.

Released by Air Quality Sciences, Inc.
Date Prepared: March 7, 1995
AQS Project #: 01891
AQS Report #: 01891-02

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TABLE 2

REGULATORY OR GUIDANCE CHEMICAL LISTS

PRODUCT 01891-001AA, VINYL COATED FIBERGLASS WINDOW SCREEN

COMPOUND	✓()=FOUND IN LISTING (CLASS)			
	CAL AIR TOXICS	CAL PROP. 65	NTP	IARC
Butyrolactone*				✓(3)
Phenol				✓(3)

CAL Air Toxics: California Air Resources Board, Toxic Air Contaminants
r = under review

CAL Prop. 65: California Health and Welfare Agency, Proposition 65 Chemicals
1 = known to cause cancer
2 = known to cause reproductive toxicity

IARC: International Agency on Research of Cancer
1 = carcinogenic to humans
2A = probably carcinogenic to humans
2B = possibly carcinogenic to humans
3 = unclassifiable as to carcinogenicity to humans
4 = probably not carcinogenic to humans

NTP: National Toxicology Program
1 = known to be carcinogenic
2 = anticipated to be carcinogens

*Indicates NIST/EPA/NIH best library match only.

Released by Air Quality Sciences, Inc.
Date Prepared: March 7, 1995
AQS Project #: 01891
AQS Report #: 01891-02

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*** ACTIVITY REPORT ***
****

TRANSMISSION OK

TX/RX NO.	7218
CONNECTION TEL	912057503022
CONNECTION ID	
START TIME	10/24 09:19
USAGE TIME	02'12
PAGES	3
RESULT	OK

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U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, DC 20207

OFFICE OF COMPLIANCE

Tel: 301-504-0608

DIVISION OF
CORRECTIVE ACTIONS
FAX: 301-504-0359

DATE: 10/24/96 PAGES TRANSMITTED 2 + cover

TO: Charles Morgan

TITLE: V.P. / Corp. Counsel

OFFICE: Phifer Wire Products

FAX #: (205) 750-3022

☐ Confirmation copy to follow by U.S. Mail

☐ Fax Transmission Only

FROM: Judith Hayes

REMARKS:

NOTE: If all pages are not received, or if you have problems with this transmittal, please contact the person listed above.

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U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, D.C. 20207

October 24, 1996

VIA FAX (205) 750-3022

Charles Morgan
Executive Vice President and Corporate Counsel
Phifer Wire Products, Inc.
P.O. Box 1700
Tuscaloosa, AL 35403-1700

RE: CPSC CA930075
Phifer Wire Products, Inc.
Polymer (PVC) Coated Fiberglass Screening Material

Dear Mr. Morgan:

Pursuant to our telephone conversation of October 22, 1996, and recently received consumer inquiries to the Commission's staff concerning the above mentioned product, I would like to request the following information:

(1) An updated list of consumer complaints since your correspondence of July 2, 1996. Please include copies of the complaints, indicating the date of receipt.

(2) Has your firm received any consumer complaints concerning the revised formulated (improved) screens that replaced the subject defective screens? If so, please provide a list and copies of these complaints indicating the date of receipt.

(3) Copies of the seven lawsuits mentioned in your letter of July 2, 1996. Please indicate the monetary amounts of the three lawsuits suits that were settled.

(4) What heat stabilizers, pigments, plasticizers, lubricants, and other modifiers/additives were blended with the PVC formulation applied to the subject screens before January 1, 1988?

(5) What heat stabilizers, pigments, plasticizers, lubricants, and other modifiers/additives were blended with the PVC between January 1, 1988 and July 1989? Describe the changes in ingredients or processes believed to have caused the defect.

(6) What heat stabilizers, pigments, plasticizers, lubricants, and other modifiers/additives were blended with the PVC after

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July 1, 1989? Describe which of these (or other) ingredients (or process) were altered to make the PVC more resistant to degradation by heat and UV. What is specifically meant by the explanation that "the PVC formula was improved by increasing the level of pigmentation"?

(7) A sample of recently manufactured "improved" screen and a sample of the defective screen. If possible, the size of each sample should be nine square feet packaged in a tightly sealed bag (polyvinylfluoride is best but polyethylene is acceptable). The recently manufactured sample should not be exposed to direct sunlight prior to submitting to us.

Please submit the requested information and samples prior to Thursday, October 31, 1996. The samples should be sent to my attention at the following address:

U.S. Consumer Product Safety Commission
4330 East West Highway, Room 613
Bethesda, MD 20814-4408

Your cooperation in this matter is greatly appreciated. If you should have any questions concerning this request, please contact me as noted below.

Sincerely,

Judith Hayes

Judith Hayes
Compliance Officer
(301) 504-0608, ext. 1355
Fax (301) 504-0359

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Judy H.

Attention: Ms. Ann Brown
and
Mrs. Patricia Atkins
C.P.S.C.
FAX # 301-504-0768

From: Mary Goldy
Phone: 810-391-1675

I'm hoped that all the children will be well and all adults can enjoy the children's laughter, I'm sending this information to add to the file on Rhyfen Wire Products.

Thank you for your time and consideration!

TOTAL PAGES: 14

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Letter sent to all Environmental Health Directors

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF COMMUNITY HEALTH
JAMES X. HAVEMAN, JR., Director

COMMUNITY PUBLIC HEALTH AGENCY

3423 N. MARTIN L. KING JR. BLVD.
PO BOX 30195
LANSING, MI 48909

August 29, 1996

Dear

Subject: Window Screens

We have received health complaints from some Michigan residents who use certain kinds of vinyl coated window screens in their homes. It has been alleged that as a result of interaction with sun rays, these window screens change color and emit small amounts of several odorous and potentially toxic compounds (volatile organic compounds) causing indoor air contamination. These screens face inward (even when windows are closed) and thereby are in continuous contact with indoor air. Some citizens have complained of having irritation of eyes, nose, and the respiratory tract, as well as other health problems, which they believe were caused by the indoor air contaminants allegedly released by the window screens.

We wish to log these complaints for possible future evaluation. If you have any record of such complaints from residents in your county or district, kindly report to us. Please list name, address and phone number of the person. Also, indicate how many persons in the family had alleged health problems. Please send report(s) or contact me:

Kirpal S. Sidhu, Ph.D., Toxicologist
Division of Health Risk Assessment
Michigan Department of Community Health
P.O. Box 30195
Lansing, MI 48909

If you have any questions or need further information, please contact me (517-335-8362) or John Hesse (517-335-8353). I look forward to hearing from you at your earliest convenience.

Thanking you for your anticipated cooperation.

Sincerely,

Kirpal S. Sidhu, Ph.D., Toxicologist
Division of Health Risk Assessment

cc: J. Hesse
H. Humphrey

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FAMILIES BLAME VINYL SCREENS FOR ILLNESSES. Front Page Oakland Press, 11/21/93

This story was published in a Michigan paper on Sunday November 21, 1993. The story should be of particular interest to families in Arizona because the problem exists to a greater degree here in our state. Although KTVK News Channel 3 published a report on defective Phifer screens in April of 1993, there has been no follow up. Since the KTVK story was published, Phifer made claims to the media, the State Attorney Generals Office and others that they were taking care of the problem by "replacing all defective Phifer screen at no charge to the consumer." Homeowners and contractors however report a different approach by Phifer, they say that Phifer has ignored requests for screen replacement, refused to replace defective screen and have mislead some into believing that the screen on their homes was not defective when it was defective. Some of these homeowners believe that the screen made them sick. One Arizona homeowner who was ignored by Phifer spent 10 days in the hospital as a result of her exposure to defective Phifer screen, she has filed a personal injury suit against the company for $250,000 including her medical expenses. Defective Phifer screen is on thousands of homes in Arizona and homeowners should be made aware of the problem. Some people could be sick and never make the connection between their illness and the screen. Health effects have been reported in Arizona, Michigan and Massachusetts with defects reported in other states. Although men & women of all ages have suffered, children and the elderly are a special concern. John Hesse of the Michigan Department of Public Health said that elderly people or those with respiratory problems are at greatest risk. Symptoms include respiratory problems, nose/eye and throat irritation, flu like symptoms and chronic fatigue due to chemical sensitivity brought on by exposure to Phifer screen. Many homeowners are upset with Phifer for not responding to the problem as promised and upset with government agencies like the US Consumer Products Safety Commission for not demanding a complete recall of the product. The Commission believes that Phifer is replacing defective screen, however the company only replaces screen for those homeowners who demand it. Most homeowners don't know that they have a problem with the screen and if they did, would not how to identify the manufacturer or how to contact them; screens don't come with labels and Phifer is discouraging dealers from warning the public. One Arizona Phifer dealer who distributed letters to costumers who had purchased defective screens alerting them of the possible health effects was warned by Phifer not to tell consumers about the potential health effects. Mr. Charles Morgan, Executive Vice President & Attorney for Phifer told them "it would be terrible publicity if we were named in a lawsuit". Phifer Wire Company is the worlds largest manufacturer of screening products, dominating the world distribution of window screen.

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Mr. Morgan has admitted on more than one occasion to reporters from Arizona and Michigan that Phifer made a mistake in their screen formula and that homeowners have been sensitized to the chemicals. However Phifers public statements, those made to the media, State Attorney Generals Office, and Consumer Product Safety Commission, vary from the position the company takes with homeowners when actually dealing with replacements. Phifer contractors also report a much different Phifer approach to the problem then the one Phifer claims to be taking in public.

Richard Blake, a screen replacement contractor who walked away from the program because Phifer was misleading consumers, still lives in Arizona and can be reached at (602) 997-2417 for more information. Mr.Blake should also be able to identify specific locations that contain defective Phifer screen and provide documentation to support the facts stated above. He will hopefully step forward if contacted by the media.

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Mr. Frank Galteri
New York Wire
P.O. Box 310
Mt. Wolf, PA 17347

August 5, 1993

Dear Frank:

The analytical data on volatiles from competitive screening that you had sent us was subjected to a literature search using the CAS numbers of the chemicals identified. This was done using Chemical Abstracts On-Line via the Research Laboratory computer network.

A few of the chemicals were phthalate plasticizer breakdown products they were not pursued further. The others (14) were searched for patents issued on their use, that is, what they might be good for. This led to a clear pattern. Ten of the 14 are building blocks used in the synthesis of insecticides; one is an insecticide in its own right; two more are reodorants used in insecticide formulation; and the 14th, a nonvolatile carrier or diluent for insecticides. There are no references to the use of any of these in PVC formulation.

Under the influence of heat and UV light, many organic reactions reverse, leading to regeneration of intermediates. These can have toxicological properties far different from those of the final product. Several of the above 14 chemicals either are listed (in Chemlist) as, or would be suspected by analogy of, being toxic. We have no basis to conclude how such materials came to be present on the competitive screening. None of the samples of new screening yielded the suspect chemicals. We would be glad to carry out UV light resistance studies on any of your products and to obtain volatiles from such aged products to assist in toxicological studies.

Sincerely,

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ICHIGAN DEPT. of Public HEALTH - Division of Health Risk Assessment
1-800-648-6442
Sun Toxic Times/ 800-MI TOXIC 9 JOHN HESSE or DR. SIDHU

Defective Sun and Window Screens

BY MARY GOLARZ, R.N.

During 1989-1991, Phifer Wire Products Inc. (PWP) of Tuscaloosa, AL, had several product failures that resulted in defective PVC coated fiberglass sun and window screens being sold to the public.

In 1993, Dr. Kirpal S. Sidhu, Michigan Department of Public Health, notified the US Consumer Product Safety Commission (CPSC) that some of the window screens "change color and emit odorous toxic compounds causing indoor air contamination ... as a result of interaction with sun rays." Dr. Sidhu also noted, "As a result, some citizens have complained of adverse health effects (allergies and chronic fatigue immune deficiency syndrome - CFIDS)."

In June 1993, pursuant to CPSC's Substantial Hazard Regulation, Charles Morgan from PWP submitted a full report on the company's product failures. According to Morgan, the problems occurred when the company tried to make its screens "resistant to heat and ultra violet degradation."

Tests conducted by Clifton D. Crutchfield, Ph.D., found the screens emitted a "complex mixture of very volatile compounds." Among the compounds detected were ketones, phthlates, aliphatic hydrocarbons, aldehydes, trimethylsilanol, and benzene. Other tests conducted by Robert G. Meeks, Ph.D., found that "weathered samples produced peak heights 10 - 200 times larger than non-weathered samples."

CPSC file on PWP contains reports from PWP representatives, public health officials, distributors, and consumers stating the screens emitted a strong unpleasant, irritating odor that was more prominent during hot weather.

Unfortunately for the consumer, Morgan reported that "There are no date codes, serial numbers, or identifying marks on the product itself." He also acknowledged that enough of the defective screening material was sold "to fully screen six million homes." However, PWP will replace any defective product or reimburse consumers for the full purchase price for the material and installation." PWP's phone number is (800) 874-3007.

A copy of the complete file on Phifer Wire Products may be obtained under the Freedom of Information Act from Todd Stevenson,

Arizona Latex-Alternate/Education/ Support Group Monthly meetings 3rd Friday of Month at 8 pm held at 9346 E 5th St., Tucson, AZ 85710. R. Susan Lamberson (520) 296-1210 for more information/ directions.

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For a Copy of "Our Toxic Times" Call - 404-547-2255

Office of the Secretary, CPSC, Washington, DC 20207.

Canadian News

Alternative Medicine Protected

On April 24, 1996, the Alberta Legislature passed Bill 209 amending the Medical Professions Act. The intention of this Bill is to protect licensed physicians who use alternative or complementary treatment methods from unjustified investigation or harassment by the Alberta College of Physicians and Surgeons. Bill 209 reads: "A registered practitioner shall not be found guilty of unbecoming conduct or found to be incapable or unfit to practice medicine or osteopathy solely on the basis that the registered practitioner employs a therapy that is non-tradition or departs from the prevailing medical practices unless it can be demonstrated that the therapy has a safety risk for that patient unreasonably greater than the prevailing treatment."

Alberta is the first province in Canada to protect by law the right of its citizens to have reliable access to safe and effective complementary medical treatment from physicians.

For more information, contact Citizens for Choice in Health Care, Box 42264, Mississauga, ON L5M 4Z0; (905) 826-9384 or Robert McMaster at (416) 207-0887.

Thanks go to Gwen Lawrence, Capreol, ON, for this information.

State News

CO Housing Conference

The conference "Closing the Door on Toxic Construction: Building for Human Health," organized by Solar Energy International and co-sponsored by the Chemical Injury Information Network and the Health Housing Coalition of Santa Fe, NM, will be held Sept. 27-30th in Carbondale, CO.

Dr. Erica Elliott will be the keynote speaker opening the conference on Friday evening. She will address the health hazards of conventional building methods and materials. Other speakers include John Bower, Carol Venolia, Panther Wilde, and Cecil Smith.

For more information, contact Johnny Weiss at (970) 963-8855 or Katherine Paras at (505) 638-5580.

General News

Safer Root Canals

Future Dentistry has information available on safer materials for root canals. To get a copy, send an SASE to FD at PO Box 608634, Orlando, FL 32860.

AAT Recognizes Toxic Injury

In 1996, the American Academy of Trauma in New York issued a position paper that states:

It is universally recognized that psychological and neuropsychological conditions often unfold gradually over a period of months or years, if not decades.

Many neuropsychological problems have consequences that effect the patient months or years after the onset of symptomatology, and some have lifelong impact.

Gradually unfolding psychological and neuropsychological conditions impair functioning sufficiently to disable many individuals, preventing employment in the usual and customary occupation in some instances and in others prohibiting employment in any occupation (total disability).

Due to the changing nature of patient environments and circumstances, not all problems can be foreseen based upon a few evaluations taking place during the first two or three years after toxic exposures and traumatic events.

For these reasons, among oth-

The following is a list of all ingredients used in the manufacture of PhiferGlass® silver-gray pvc-coated fiberglass insect screening manufactured between January 1, 1988 and July 1, 1989

INGREDIENT	DESCRIPTION/COMPOSITION	SUPPLIER
Continuous filament fiberglass	fibrous glass consisting of silicon oxides, aluminum calcium, boron & magnesium	PPG Industries, Inc. One PPG Place Pittsburgh, PA 15272 (304)843-1300
Jayflex DINP	Diisononyl Phthalate (benzenedicarboxylic acid)	Exxon Chemical Americas (713)870-8000
Drapex® 4.4	Octyl epoxy tallate	Witco Argus Division 633 Court St. Brooklyn, NY 11231-2193 (718)858-5678
Therm-Chek® 6223	Calcium cadmium zinc stablizer in aliphatic solvent	Ferro Corp. Bedford Chemical Division 7050 Krick Road Walton Hills, OH 44146-4494
Polypeg® E-400	Polyethylene glycol ester	Uniroyal Chemical Co., Inc. Middlebury, CT 06749 (203)573-3303
Aluminum Paste	Pigment containing aluminum flake and aromatic solvents	Silberline Mfg. Co., Inc. Tamaqua, PA 18252 (717)668-6050
Black Paste	Carbon black pigment and DINP plasticizer	Toncee, Inc. 1500 Wilson Way Smyrna, GA 30082 (404)333-8356
Thermoguard S	Antimony trioxide	Atochem P. O. Box 1104 Rahway, NJ 07065 (201)499-2403
Oxy 654-H PVC Homopolymer	Ethene, Chloro-Homopolymer	Occidental Chemical Armand Hammer Blvd. Pollstown, PA 19464 (716)278-7021
GEON Resin 123A PVC Homopolymer	Ethene, Chloro-homopolymer poly-vinyl chloride	B.F. Goodrich 6100 Oak Tree Blvd. Cleveland, OH 44131 (216)447-7601

REPLACED LEAD

THE SCREENS MANUFACTURED PRIOR TO JAN. 1988

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INGREDIENT	DESCRIPTION/COMPOSITION	SUPPLIER
GEON Resin 213 PVC Homopolymer	Ethene, Chloro-homopolymer poly-vinyl chloride	B.F. Goodrich 6100 Oak Tree Blvd. Cleveland, OH 44131 (216)447-7601
Silicone Fluid L-45/50	Polydimethylsiloxane	Union Carbide P. O. Box 38002 South Charleston, WV 25303
Kerosine	Petroleum hydrocarbon	B.P. Oil, Inc. Gulf Products Division Midland Bldg. Cleveland, OH 44115

May 26, 1994

To: Mr. John Hesse
From: Lisa Kelley - Phone # 1-810-391-6227, Fax # 1-810-391-4434

I have spoken to 28 U.S. residents about window screens, 21 were from Arizona. Most of people I spoke to were named in the CPSC file on Phifer Wire products. The Arizona Attorney General's office kept a list of 30 people who inquired or complained about window screens. Consumer's letters as well as other names were in the CPSC file as well.

I will summarize the information I gathered from speaking to the residents . Of course my summary will not include health effects experienced in Mary's home or mine, nor will it include any information she may have gathered.

28 residents contacted

7 had called Arizona Atty. Gen. merely to inquire about which screens were in question after seeing TV news. They did not believe they had them.

1 resident had screens changed because of discoloration, but mentioned no odor or health effects.

1 resident reported past odor but had not replaced screens at time of conversation. A history of burning nostrils, coughs, colds, and sore throats were mentioned, but screens had not been removed to determine link.

19 reported health effects. The symptoms experienced varied, they ranged from headaches and fatigue to more complicated and lengthy complaints.

I hope this information will be helpful to you. I apologize for the delay in getting it to you. I hope you will share with me anything further that you generate or receive concerning this matter.

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June 3, 1994

To: John Hesse

From: Lisa Kelley PH 1-810-391-6227, FAX 1-810-391-4434

I have attempted to briefly summarize the results of conversations Mary had with various residents regarding problems with screens. I am sending this information with Mary's approval.

13 people were contacted or made contact

8 were Arizona residents

5 were Michigan residents

12 reported health effects

1 reported having screens replaced, but I don't have other details about this case

I hope this information will be helpful. Please keep me up to date on any developments.

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I am writing to you in the hope that you will view a particular consumer problem to be as important as I do. I'm writing about indoor air pollution that could occur as a result of V.O.C. off gassing from defective window screens.

I had noticed an odd odor (especially in sunny rooms) and the development of various health problems shortly after we moved into this home.The problems persisted for some time before I heard that some neighbors experienced similar problems and had traced the source to the window screens! Most of the homes in our subdivision were built around the same time. Many of the homes, like ours, have casement windows that place the screens on the inside of the home. As we did, many others left their screens up all year. Apparently these screens have been found in skylights also.

Detroit and Phoenix area news stations aired stories about this problem in April/May of 1993. The CPSC did create a file on the Phifer Wire Products screens. The file was closed after Phifer explained a program to "Locate and Replace" the defective material. While Phifer, to my knowledge, has often agreed to replace screens for consumers who contact them with concerns, I am not sure what effort has been put forth to locate other defective material. So, of course, I worry about homes where the product is still in place and could be causing problems. How will families be made aware of this problem?

Dr. Kirpal Sidhu and Mr. John Hesse of the MI Dept. of Public Health in Lansing, MI, were the individuals instrumental in urging the CPSC to investigate the product. Through information I have gathered from NIOSH, CDC, and other scientists and agencies, I have learned that many of the chemicals we lived with during our exposure are dangerous. I have also learned about Multiple Chemical Sensitivity.

People are still requesting that their screens be replaced. Complaints, claims, and lawsuits continue to be filed. In my home alone, Phifer has replaced my original screens 4 times. I have heard so much lately about the dangers of imported blinds containing lead. I can't help but wonder about the impact the defective screens have as well.

As a wife and mother who has been touched by and has seen her family touched by this problem, I have attempted to learn all I can and interest those who may be able to help. I hope this issue concerns you, Mr. Nader, perhaps you can review some of the available data.

Letter sent to all Environmental Health Directors

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF COMMUNITY HEALTH
JAMES K. HAVEMAN, JR., Director

COMMUNITY PUBLIC HEALTH AGENCY

3423 N. MARTIN L. KING JR. BLVD.
PO BOX 30195
LANSING, MI 48909

August 29, 1996

Dear

Subject: Window Screens

We have received health complaints from some Michigan residents who use certain kinds of vinyl coated window screens in their homes. It has been alleged that as a result of interaction with sun rays, these window screens change color and emit small amounts of several odorous and potentially toxic compounds (volatile organic compounds) causing indoor air contamination. These screens face inward (even when windows are closed) and thereby are in continuous contact with indoor air. Some citizens have complained of having irritation of eyes, nose, and the respiratory tract, as well as other health problems, which they believe were caused by the indoor air contaminants allegedly released by the window screens.

We wish to log these complaints for possible future evaluation. If you have any record of such complaints from residents in your county or district, kindly report to us. Please list name, address and phone number of the person. Also, indicate how many persons in the family had alleged health problems. Please send report(s) or contact me:

Kirpal S. Sidhu, Ph.D., Toxicologist
Division of Health Risk Assessment
Michigan Department of Community Health
P.O. Box 30195
Lansing, MI 48909

If you have any questions or need further information, please contact me (517-335-8362) or John Hesse (517-335-8353). I look forward to hearing from you at your earliest convenience.

Thanking you for your anticipated cooperation.

Sincerely,

Kirpal S. Sidhu, Ph.D., Toxicologist
Division of Health Risk Assessment

cc: J. Hesse
H. Humphrey

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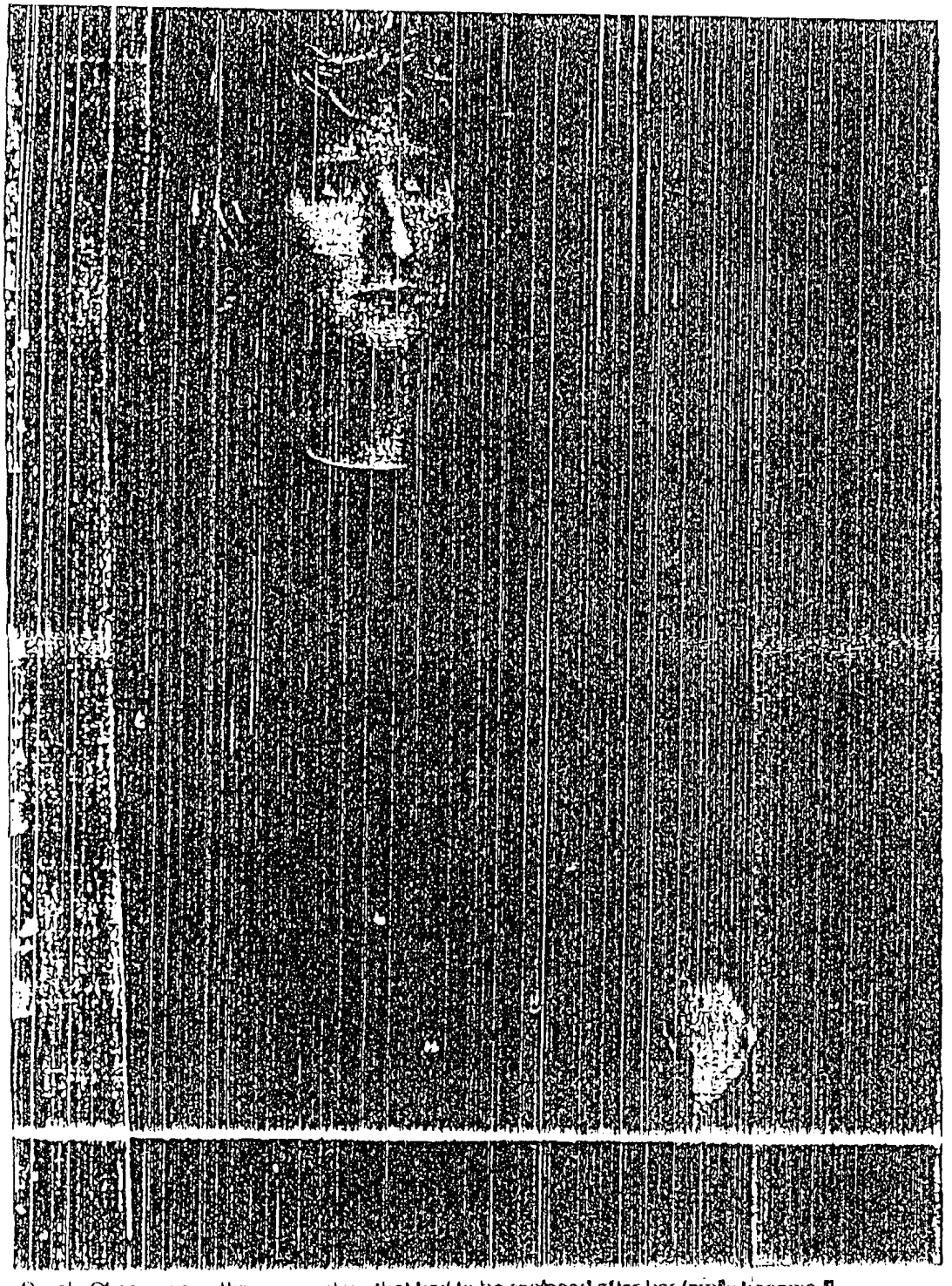

Carole Chase opens the screen door that had to be replaced after her family became ill

Oakland Press photos/TIM D. ROBINSON

Window screens in the Chase home emitted poison chemicals

Families blame vinyl screens for illnesses

By TOM MURPHY
Of The Oakland Press

Six months after moving into her new Independence Township home in 1999, Carole Chase knew something wasn't right.

She used to run four miles a day, but suddenly she was too weak to even climb the stairs. The constant vomiting, excruciating headaches and a sudden case of bronchitis were even more puzzling.

Her infant daughter had to sleep with gloves on so she wouldn't rip off the crusty [illegible] caused by [illegible] eczema. Her son had developed a chronic sinus infection.

Her husband, Kevin, however, was fine. He also spent most of his time away from home as a salesman for General Electric Inc.

The Chase family is not alone. In their neighborhood and elsewhere in Oakland County, people have developed serious illnesses that disappeared when they removed of all things — their window screens.

Window screens may seem harmless enough, but apparently some Fiberglas screens made in 1998 and 1999 by Phifer Wire Products Inc. of Alabama break down prematurely when exposed to sunlight and heat and give off potentially dangerous fumes.

Four independent laboratories have tested the screens in Michigan, Arizona, Alabama and Massachusetts, and all [illegible] found that the defective screens give off chemical emissions. None of the tests found the emissions to be at dangerous levels.

But two of the tests found

SEE SCREENS, A-11

SCREENS

FROM PAGE A-1

Oakland residents blame mysterious illnesses on defective window screens

that the chemicals can be strong irritants to the nose, eyes and upper respiratory tract and can cause flu-like symptoms and possibly bronchitis. Local residents in contact with the defective screens have complained of all these symptoms.

Whether the screens were directly responsible for the reported health problems could not be determined because there were no air samples available from the households at the time people were suffering the most, said John Hesse of the Michigan Department of Public Health.

Phifer admits it incorrectly mixed the chemicals to make the vinyl-coated Fiberglas screens in 1988-89 and has replaced the screens in more than 20 homes in Chase's neighborhood.

The world's largest producer of window screens, Phifer has replaced screens in hundreds of households across the United States, including more than 200 in Michigan.

But Carole Chase and some of her neighbors are not satisfied with the company's response. They are demanding the company recall the defective screens and publicly announce that consumers may be at risk if they have been exposed to the screens.

"I'm not looking for compensation. I'm looking for the company to recall these screens, which they still haven't done," Chase said. "There may be other people who have suffered from these screens and don't know it. If I can prevent it, I will."

The U.S. Consumer Product Safety Commission, which has received several complaints about the screens, recently completed an investigation of the product and found that a recall is not necessary because the company is replacing the screens.

Chase and her neighbors have a different opinion. They could fill a medical journal with their horror stories, which they believe are caused by the screens.

They've had biopsies and steroid treatments, they've visited Minnesota's famous Mayo Clinic, they've had air quality tests and visits from health officials, fire officials and building inspectors. They've lost hair and weight, and one family even put its cat to sleep, thinking it was responsible for illnesses.

Everyone was incredulous when word spread that defective screens could be responsible.

"I couldn't believe the screens would cause this. It was unbelievable to me," said Dana Fortinberry, a neighbor of Chase's and magistrate at 52nd District Court in Clarkston.

She, her husband and three children broke out in rashes several months after moving into their home in 1990. In 1991, Dana Fortinberry became violently ill and was hospitalized for 10 days.

She said doctors never connected the family illnesses with the screens. But she's convinced they were responsible because within a week of removing the screens in 1992, everyone was fine.

When Phifer brought in new vinyl screens this spring, the problems returned. When the screens were removed once again, everyone got better.

"It was the wildest thing I'd ever seen," Fortinberry said.

To experts familiar with the screens, however, such reports are not surprising.

They say that people who develop acute "chemical sensitivity," which may be the case for Chase and her neighbors, often have adverse reactions when exposed to the same chemicals in new screens, even if they are not defective.

As a result, some people sensitive to Phifer screens have had their screens replaced by the company as many as four times, and still had health problems.

Finally, the company is installing metal or aluminum screens, and residents say they have not triggered any health problems.

Chase and her neighbors have similar stories about the first screens. They watched the screens change from black to a rusty brown or yellowish color, and they smelled like smoke or burning electrical wire. Some residents have reported seeing small fiberglass particles falling from the screens.

In Oakland County, two lawsuits have been filed against Phifer — one by Chase and the other by Fox Run, a Waterford Township subdivision where at least one resident has complained of health problems.

Charles Morgan, attorney for Phifer, said its insurance provider has paid claims to five Michigan homeowners who have complained about the screens within the past five years, but that there have been fewer than 15 claims against the company worldwide.

Morgan admits that people may have suffered health problems from the screens.

"I'm not saying it's all in their heads. It wasn't," Morgan said. "They were truly sensitized to these chemicals." He noted, however, that all households are filled with chemicals, including paint, which can trigger health problems.

Whether people who have been exposed to the Fiberglas screens will remain chemically sensitive or suffer longterm health problems remains to be seen, said Hesse, of the state health department.

A study done by the University of Alabama, however, found that "chronic or longterm health effects were not expected from exposures to the degraded screen material."

In the Chase home, the new metal screens from Phifer have not triggered any health problems. But Carole Chase fears the effects of her old screens may linger for many years.

"I can't run anymore or do aerobic exercise because I get a pain and burning in my chest," she said. "This is from a person who worked out every day. It's very upsetting to me."

(Those with concerns about Phifer vinyl window screens made in 1988 or 1989 may call the U.S. Consumer Product Safety Commission hot line at 800-638-2772.)

Phifer Wire Products
CA930075

Judith Hayes
October 17, 1996
Extension 1355

Product: Window screening material
PVC-coated fiberglass yarn

Defect: Due to inadequate PVC-coating, the screening has the potential to degrade when exposed to direct sunlight and heat. Allegedly, toxic fumes are emitted during the degrading process that cause the following physical reactions: nausea, sore throat, watery eyes, headaches and lethargy.

Involved product: 900 million square feet which can be interpreted as 6 million home installations. Product manufactured from 1/1/1988 to 7/1/1989.

Incidents: Approximately a total of 44 reported complaints involving adverse health affects received by the Arizona Dept. of Health (30 complaints) CPSC (1 complaint), and the firm (13 complaints). Time frame: Oct. 1991 to Oct. 1993.

Corrective actions performed by firm to address consumer complaints concerning adverse reactions to the odor emitted by the degraded material of the subject window screening:

(1) Manufacturing process modified in 1989 to correct the possibility of the screens degrading.
(2) In February 1993, notices to homeowners offering free replacement of the subject screens.
(3) The offering of free replacement screens to any consumers that contacted the firm concerning the subject screens. Consumers were notified of problem via television news programs in the state of Arizona and in the city of Detroit, MI. which referred consumers to CPSC hotline to report problem.

Compliance preliminary determination performed 10/21/93:

That risk of injury exists, remedial action by firm be acknowledged and file closed. (class D)

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PHIFER WIRE PRODUCTS, INC.
P. O. BOX 1700 • TUSCALOOSA, ALABAMA 35403-1700 U.S.A.

■ CHARLES E. MORGAN
Executive Vice President and Corporate Counsel

July 2, 1996

Mr. Marc J. Schoem
Director
Division of Corrective Actions
U.S. Consumer Product Safety Commission
5401 Westbard Avenue - Room 240
Washington, DC 20207

Re: CPSC CA930075
Phifer Wire Products, Inc.
Polymer (PVC) Coated Fiberglass Screening Material

Dear Mr. Schoem:

On June 4, 1993, you sent us a request for information about the above referenced product. On June 23, 1993, I responded with a letter, Full Report, and copies of all existing test reports on the subject product and other supporting documentation. You investigated the product and sent me a letter dated October 26, 1993 which concluded that no further action was required by the Commission under Section 15 of the CPSA.

About six months after submitting our response, Full Report, etc., I submitted some additional information for this file under my cover letter dated January 6, 1994. During the three years since our initial report, we have received a few more complaints and had more testing done on the product. The following consumers have reported allergic type reactions to the product:

NAME	DATE
Nada Feldman	July 1993
K.I. Dunford	July 1993
Marie DeMan	September 1993
D.J. Pygman	January 1994
Margaret Steen	January 1994
Lois Moore	April 1994
Tammie Mandeville	May 1994
Mary Olsson	May 1994
Joe Bergantino	July 1994
Anne Hosbach	March 1995

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NAME	DATE
Steven Antonello	April 1995
Bruce Jones	May 1995
Helen Garofalo	July 1995
Cora Abel	July 1995

Four of the consumers whose names we provided in our initial response (Chase, Golarz, Kamuda and Kelley) subsequently filed law suits. Three of the above listed claims (DeMan, Mandeville, and Jones) resulted in suits, making a total of seven product liability lawsuits against Phifer Wire Products in the company's 44-year history. Three of those suits were settled and dismissed; the other four are pending.

When I was contacted by Mary Olsson in May of 1994, I promptly supplied Mrs. Olsson with copies of all existing test data on our product. Mrs. Olsson was not completely satisfied with the test data I sent her and requested that additional testing be done on the actual window screening removed from her home. Based upon advice from an environmental consultant at Northeastern University, who had been selected and employed by Mrs. Olsson, she recommended that we use Air Quality Sciences, Inc. of Atlanta, Georgia ("AQS") to do more in-depth testing on the product. We agreed to pay for the testing at AQS using material sent directly from Mrs. Olsson to the test facility in Atlanta.

Although we played no part in selecting AQS, we did some investigation and learned that AQS is a highly respected facility that does work for the Environmental Protection Agency. The testing done on our product by AQS in 1994 was the most thorough and sophisticated testing that has been done on this product to date. I have enclosed a complete copy of the AQS Test Report dated February 16, 1995. Since that report is highly technical, I asked them to issue an Interpretative Report to put the data into perspective. I have enclosed a copy of that Interpretative Report, which is dated March 7, 1995. I also asked Dr. Clifton D. Crutchfield, a scientist who had been involved with a great deal of the research information we supplied to you with our initial report, to review the Air Quality Sciences data and explain to us the significance of their findings. I have enclosed a copy of a letter dated November 23, 1994 in which Dr. Crutchfield comments on the AQS report. (Please note that the reason Dr. Crutchfield's letter is dated prior to the date of the AQS report is because the AQS report was initially issued in November 1994 but was reissued in February 1995 to correct clerical errors. Dr. Crutchfield reviewed the data in the initial AQS report which is exactly the same data contained in the clerically corrected report dated February 16, 1995.)

The Air Quality Sciences Interpretative Report puts the test data into perspective by comparing the total volatile organic compounds (TVOC) emissions from our product with "normal ranges" established for other indoor building materials. Though the report notes that no

normal ranges have been established for window screen emissions, it compares the results of our product testing to the criteria established for flooring and wall coverings. AQS notes that the emissions from our products were at levels significantly below the TVOC emissions criteria established for flooring and wall coverings. The report also states that a regulatory evaluation of the chemicals detected in emissions from our product did not indicate the presence of any known or potential carcinogens.

Dr. Crutchfield found the results of the AQS study to be "consistent with the results of four previous tests done of Phifer screening material that I reviewed and summarized in a report dated April 27, 1993. Those previous studies, conducted independently by four separate laboratories and/or environmental firms, also found emission rates from Phifer screening materials to be far below any level considered to be potentially toxic." We submitted a complete copy of all of those four previous tests along with Dr. Crutchfield's April 27, 1993 summary report in our initial response to your request for information.

As noted in our initial response, we believe that the problem that lead to the failure of some of our window screening material was corrected in 1989. No new reports have been received during the past year. If we ever receive any more complaints about the material, we will notify you.

Sincerely yours,

PHIFER WIRE PRODUCTS, INC.

Charles Morgan

Charles Morgan

CM:jh

Enclosures

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AIR QUALITY SCIENCES, INC.

INDOOR AIR QUALITY EVALUATION OF

VINYL COATED FIBERGLASS WINDOW SCREENING

prepared for

PHIFER WIRE PRODUCTS, INC.

Released by Air Quality Sciences, Inc.
AQS Report No. 01891-01R2
February 16, 1995

SUPERSEDES AQS REPORT 01891-01 and AQS REPORT 01891-01R

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Released by Air Quality Sciences, Inc.
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Date Prepared: February 16, 1995
AQS Project #: 01891
AQS Report #: 01891-01R2
SUPERSEDES AQS REPORT 01891-01 and AQS REPORT 01891-01R

EXECUTIVE SUMMARY

PROJECT DESCRIPTION

Air Quality Sciences, Inc. (AQS) is pleased to present the results of its environmental chamber evaluation of "Vinyl Coated Fiberglass Window Screening" sample for Phifer Wire Products, Inc. AQS conducted this product study following the protocols and guidelines of ASTM Standard D5116. (1). Testing of the window screen sample was completed under standard environmental chamber operations conditions as presented in Table 1. Product exposure was conducted at 49ºC (120ºF).

The window screen sample was monitored for emissions of total volatile organic compounds (TVOC) and other individual volatile organic compounds (IVOCs) in a small environmental chamber over a 96 hour period. Predicted air concentrations were determined with the assumption there would be 0.2 m^2 of window screen exposed in an interior room 23 m^3 in volume (10 ft^2 area with an 8 ft high ceiling). The outside air exchange rate within this room was assumed to be 0.35 air changes per hour (ACH).

RESULTS

Emission factors and predicted air concentrations for total volatile organic compounds are provided in Table 2. Emission factors for identified individual chemicals are provided in Table 3.

The TVOC levels decreased for the first 24 hours of exposure, after which they became constant. Numerous volatile organic compounds were found to be emitting from the window screen material, as shown in Table 3. There were numerous alcohols and ketones detected. One of the primary alcohols detected, 3,7-dimethyloctanol had predicted air levels ranging from 25 $\mu g/m^3$ to 3 $\mu g/m^3$ during a 96 hour exposure period. Another chemical, phthalic anhydride, appeared to be increasing with exposure time with predicted air levels ranging from 2 $\mu g/m^3$ to 9 $\mu g/m^3$.

Released by Air Quality Sciences, Inc.
Date Prepared: February 16, 1995
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PRODUCT EVALUATION METHODOLOGIES

ENVIRONMENTAL CHAMBER

The window screen sample was loaded in a small environmental chamber and potential chemical emissions were analytically evaluated. Computerized control and quality assurance measures ensured that the chambers were operated in a precise and accurate manner according to the specifications required for volatile organic compound emission studies for consumer materials and following the guidelines of ASTM D5116 (1). Environmental chamber study parameters are presented in Table 1.

ANALYTICAL MEASUREMENTS

Total volatile organic compound and individual organic compound measurements were made utilizing solid sorbent collection followed by thermal desorption and gas chromatographic/mass spectrometric identification and quantification as presented by AQS Method 006, which follows EPA Method IP-1B. The multi-bed collection technique, separation, and detection analysis methodologies have been adapted from techniques presented by the USEPA and other researchers (2-5).

AIR CONCENTRATION DETERMINATIONS

Emission rates of total volatile organic compounds, 3,7-dimethyloctanol, and phthalic anhydride were used in an appropriately prepared computer model to determine potential air concentrations of the pollutants. The computer model utilized the measured emission rate changes over the one week time period to determine the change in air concentrations that would accordingly occur. The EPA's Indoor Air Exposure Model, Version 2.0, was specifically modified to accommodate Phifer Wire Product's sample and chemicals of interest (6). Ventilation and occupancy parameters assumed a 23 m^3 space with 0.35 air changes per hour of outside air.

The model measurements were made with the following assumptions: air within the residential room is well-mixed at the breathing level zone of the occupied space; environmental conditions are maintained at 50% relative humidity and 23°C (73°F); there are no additional sources of these pollutants; and there are no sinks or potential re-emitting sources within the space for these pollutants.

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QUALITY CONTROL PROCEDURES FOR ENVIRONMENTAL CHAMBER EVALUATIONS

Air Quality Sciences' quality control/assurance plan is designed to ensure the integrity of the measured and reported data obtained during its product evaluation studies. This program encompasses all facets of the measurement program from sample receipt to final review and issuance of reports.

One of the most critical parameters in AQS' product evaluations is the measurement of ultratrace levels of gaseous chemicals, typically in the ppb air concentration range. This necessitates a very rigidly maintained effort to control background contributions and contamination. These contributions must be significantly less than those levels being measured for statistically significant data to be obtained. AQS addresses this control in many directions including chamber construction materials, air purification and humidification, sampling materials and chemicals, sample introduction, and analysis.

All environmental chamber procedures are in accordance with ASTM Guide D5116-90.

Various measures are routinely implemented in a product's evaluation program. These include but are not limited to:

appropriate record keeping of sample identifications and tracking throughout the study;

calibration of all instrumentation and equipment used in the collection and analysis of samples;

tracking of all chamber parameters including air purification, environmental controls, air change rate, chamber mixing, air velocities, and sample recovery;

analysis of spiked samples for accuracy determinations;

duplicate analyses of 10% of all samples evaluated and analyzed;

linear regression of all standardization ;

analysis of controls including chamber backgrounds, sampling media, and instrument systems.

QC data on TVOC measurements conducted for the year 1993 showed an average precision measurement of 9.5% RMD based on duplicate measurements and 94% accuracy based on toluene spikes. Performance audits conducted on-site by EPA related to industry test programs were favorable.

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TABLE 1

ENVIRONMENTAL CHAMBER TEST PARAMETERS FOR PHIFER WIRE PRODUCTS, INC.

PRODUCT 01891-001AA

Product Description:	Vinyl coated fiberglass window screening
AQS Sample Identification:	AQS01891-001AA
Environmental Chamber:	SC4
Product Loading:	0.81 m^2/m^3
Test Conditions:	1.0 ACH 14.0% RH ± 2.0% RH 49.0°C ± 1.0°C
Test Period:	10/07/94 - 10/11/94
Test Description:	The product was received at AQS as packaged and shipped by Mary Olsson on October 5, 1994. The package was visually inspected and stored in a controlled environment following sample check in. Just prior to loading, the window screen was unpackaged and placed into the chamber on stainless steel x-supports to expose both sides of the sample. It was then tested according to the specified protocol.

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TABLE 2

SUMMARY OF TOTAL VOLATILE ORGANIC COMPOUND EMISSION FACTORS AND PREDICTED AIR CONCENTRATIONS

PRODUCT 01891-001AA, VINYL COATED FIBERGLASS WINDOW SCREEN

ELAPSED EXPOSURE HOUR	EMISSION FACTOR $\mu g/m^2 \cdot hr$	PREDICTED AIR CONCENTRATION $\mu g/m^3$
4.000	339.7	164
8.000	228.8	150
24.000	40.5	31
48.000	28.7	31
72.000	12.3	31
96.000	35.5	31

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TABLE 3

EMISSION FACTORS OF IDENTIFIED INDIVIDUAL VOLATILE ORGANIC COMPOUNDS AT 4, 24, AND 96 ELAPSED EXPOSURE HOURS

$\mu g/m^2 \cdot hr$

PRODUCT 01891-001AA, VINYL COATED FIBERGLASS WINDOW SCREEN

COMPOUND IDENTIFIED	ELAPSED EXPOSURE HOUR		
	4.0	24.0	96.0
1-Decanol (N-Decyl alcohol)*	2.6		
1-Decene	5.7		
1-Dodecene	14.2	1.1	
1-Heptanol, 6-methyl*	6.9	0.9	
1-Hexanol, 2-ethyl	3.1		
1-Hexanol, 5-methyl-*	11.8	1.6	1.5
1-Nonanol*	14.6		
1-Octene, 3,3-dimethyl-*	5.2		
1-Penten-3-one*	2.4	1.2	1.5
1-Pentene, 2,3-dimethyl- (8CI9CI)*	42.9	5.7	4.5
1-Pentene, 2-methyl*	4.1		
1-Pentene, 3-methyl*	1.0		
1-Undecene*	9.3		
2(3H)-Furanone, dihydro-4,4-dimethyl-*	4.6		
2-Butanone (Methyl ethyl ketone, MEK)*	2.6		
2-Butenal, 2-methyl-, (E)-*	2.9		

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COMPOUND IDENTIFIED	ELAPSED EXPOSURE HOUR		
	4.0	24.0	96.0
2-Decenal, (Z)- (8CI9CI)*	13.5		
2-Ethylacrolein*	3.2		
2-Pentanone*	1.6		
2-Propanone, 1-(1-methylethoxy)-*	1.2		
3-Buten-2-one*	11.7	6.0	4.3
3-Octanol, 3,7-dimethyl*	43.2	6.2	5.3
4-Penten-2-one, 4-methyl- (8CI9CI)*	0.9		
Acetic acid	14.9		
Acetone (2-Propanone)	6.0	1.6	0.9
Butyrolactone*	8.2		
Cyclopentane, 1,1-dimethyl*	26.4	3.2	2.9
Cyclopentane, propyl- (8CI9CI)*	19.5		
Cyclopentasiloxane, decamethyl*	1.9		
Cyclopropane, 1-ethyl-2-methyl-, cis-*	2.5		
Cyclopropane, ethyl- (8CI9CI)*	2.5		
Cyclotetrasiloxane, octamethyl	2.1		
Ethanol	5.3	5.0	5.2
Ethanone, 1-cyclopropyl-*		0.7	
Furan, 2-methyl-	2.6		
Heptane, 2,4-dimethyl	1.6		
Hexane, 2,2,4-trimethyl	4.3		
Methanol		5.1	
Pentane, 2,2,4-trimethyl (Isooctane)	13.2		
Pentane, 2,2-dimethyl*	2.4		

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COMPOUND IDENTIFIED	ELAPSED EXPOSURE HOUR		
	4.0	24.0	96.0
Pentane, 2,3,3-trimethyl- (8CI9CI)*	6.6		
Pentane, 2,3,4-trimethyl	2.7		
Phenol	6.3		
Phthalic anhydride*		2.1	9.4
Unidentified	1.7		

*Indicates NIST/EPA/PHS best library match only.
Individual volatile organic compounds are calibrated relative to toluene.

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REFERENCES

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3. Bertoni, G., F. Bruner, A. Liberti, and C. Perrino, J. Chromatogr., 203, 263-270 (1981).

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AIR QUALITY SCIENCES, INC.

INTERPRETIVE REPORT ON AQS REPORT 01891-01R2
PREPARED FOR: PHIFER WIRE PRODUCTS

Air Quality Sciences, Inc. (AQS) presented the results of an environmental chamber evaluation of a "vinyl coated fiberglass window screen" material for Phifer Wire Products. These results were reported in AQS report 01891-01R2, dated February 16, 1995. Volatile organic compound emissions were measured and reported as total volatile organic compounds (TVOC) and individual chemicals.

The product was placed into an environmental chamber with an atmosphere designed to simulate an actual indoor environment at 50% relative humidity and 23°C (75°F) with a dynamic air flow. Following a four hour equilibration period in the chamber, chemical emissions were measured over a four day period. The product was studied over an extended time period to determine whether or not the chemical emissions would decay over time. Measured emission data were used in an exposure model to determine chemical concentrations which would result in a normal room with this product in use.

The data showed emission factors for TVOC ranging from 339.7 $\mu g/m^2 \cdot hr$ after four hours of exposure to an average of 29.2 $\mu g/m^2 \cdot hr$ within 24 hours of exposure. These data indicate the levels of total volatile chemicals being emitted per square area (m^2) of the screen material per hour. The material appeared to be a constant emitter at 24 hours of exposure which means that it will constantly emit at this level for some extended time.

There are no available emissions data on comparable screen materials to determine whether or not these emissions data appear to be within normal ranges. There are some suggested TVOC emissions criteria for generic indoor materials such as flooring, wall coverings, etc. as available from the Environmental Protection Agency. In addition, the carpet industry has a voluntary testing program which has a TVOC criterion for IAQ acceptability. The emission results of the screen material are compared to TVOC criteria in Table 1. As shown, the TVOC emission level of the screen is significantly less than the default TVOC criteria used for the other products.

There were over forty individual chemicals identified as emitting from the screen materials The majority of these chemicals flashed off of the product within 24 hours of exposure, and were no longer emitted. A regulatory evaluation of these chemicals, as shown in Table 2, did not indicate the presence of any known human or potential human carcinogens. Those chemicals found to be emitting following 24 hours of exposure included some alcohols and ketones which could have an odor. There was an indication of the presence of phthalic anhydride, often associated with alkyd resins and plasticizers. This chemical is a skin irritant at levels much higher than that found emitting from the screen. However, the analytical technique used in this analysis is not specific for this compound, and the results may not be quantitatively accurate. It is recommended that a more thorough study be completed of emissions of this chemical and potential exposure levels.

Released by Air Quality Sciences, Inc.
Date Prepared: March 7, 1995
AQS Project #: 01891
AQS Report #: 01891-02

1331 Capital Circle
Atlanta, Georgia 30067

HEALTH EFFECTS GROUP, INC.

305 East Fort Lowell Road Tucson, Arizona 85705
(602) 888-4442 (602) 888-9334 Fax

Toxicology
Environmental Health
Industrial Hygiene

November 23, 1994

Charles Morgan
Phifer Wire Products, Inc.
P.O. Box 1700
Tuscaloosa, Alabama 35403

Dear Mr. Morgan:

I have reviewed the report entitled "Indoor Air Quality Evaluation of Vinyl Coated Fiberglass Window Screening" that was prepared by Air Quality Sciences, Inc. (AQS Report No. 01891-01). The emissions from Phifer screening material detected by Air Quality Sciences during their dynamic environmental exposure studies were present at extremely low levels.

Based on air concentrations modeled by Air Quality Sciences from their measured emission data and the EPA Indoor Air Exposure Model, Version 2.0, volatile organic compound (VOC) exposure rates from the screening material would be far below any level considered to be potentially toxic.

The findings of the Air Quality Sciences study are consistent with the results of four previous tests of Phifer screening material that I reviewed and summarized in a report dated April 27, 1993. Those previous studies, conducted independently by four separate laboratories and/or environmental firms, also found emission rates from Phifer screening materials to be far below any level considered to be potentially toxic.

Sincerely,

Clifton D. Crutchfield

Clifton D. Crutchfield, Ph.D.
Certified Industrial Hygienist

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TABLE 1

TVOC EMISSION FACTOR AT 24 ELAPSED EXPOSURE HOURS COMPARED TO AVAILABLE IAQ CRITERIA $\mu g/m^2 \cdot hr$

PRODUCT 01891-001AA, VINYL COATED FIBERGLASS WINDOW SCREEN

Target Analytes	AQS Measured Values ($\mu g/m^2 \cdot hr$)	IAQ Guidelines or Other Criteria ($\mu g/m^2 \cdot hr$)
TVOC	40.5	500 - carpet[1] 600 - flooring material and floor coating[2] 400 - wall materials, wall coatings, and movable partitions[2]

[1]Criteria level currently being used by the carpet industry's voluntary labeling of products.
[2]Default criteria for flooring materials by Tucker of USEPA, Indoor Air '90, 1990.

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TABLE 2

REGULATORY OR GUIDANCE CHEMICAL LISTS

PRODUCT 01891-001AA, VINYL COATED FIBERGLASS WINDOW SCREEN

COMPOUND	✓()=FOUND IN LISTING (CLASS)			
	CAL AIR TOXICS	CAL PROP. 65	NTP	IARC
Butyrolactone*				✓(3)
Phenol				✓(3)

CAL Air Toxics: California Air Resources Board, Toxic Air Contaminants
r = under review

CAL Prop. 65: California Health and Welfare Agency, Proposition 65 Chemicals
1 = known to cause cancer
2 = known to cause reproductive toxicity

IARC: International Agency on Research of Cancer
1 = carcinogenic to humans
2A = probably carcinogenic to humans
2B = possibly carcinogenic to humans
3 = unclassifiable as to carcinogenicity to humans
4 = probably not carcinogenic to humans

NTP: National Toxicology Program
1 = known to be carcinogenic
2 = anticipated to be carcinogens

*Indicates NIST/EPA/NIH best library match only.

Released by Air Quality Sciences, Inc.
Date Prepared: March 7, 1995
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